

**OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
BUREAU OF LAND AND WASTE MANAGEMENT  
POSTCLOSURE CARE HAZARDOUS WASTE PERMIT**

**Permit Number:** SCD 003 349 065

Issue Date:  
Expiration Date:

Effective Date:  
Date Last Modified:

**This Permit is hereby issued to:**

**(Owner)**

Santolubes Manufacturing Holdings, LLC    **AND**

**(Operator)**

Santolubes Manufacturing, LLC  
dba Blackman Uhler Specialties

**Address:** 2155 West Croft Circle  
Spartanburg, SC 29304

2155 West Croft Circle  
Spartanburg, SC 29304

**Facility Contact:**

Mr. John Paluszak

**Phone:**

(864) 596-1590

This Permit is for the postclosure care of two waste management areas consisting of (1) former wastewater treatment lagoon and (2) corrective action management unit (CAMU) and identification and corrective action for solid waste management units (SWMUs) located at 2155 West Croft Circle, Spartanburg, South Carolina.

This Permit is issued pursuant to Section 44-56-10 et seq. Regulation 61-79 of the 1976 South Carolina Code of Laws, as amended. The authority granted hereunder is subject to the requirements of the aforementioned laws and regulations and the attached conditions.

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Richard Haynes, P.E., Director  
Division of Waste Management  
Bureau of Land and Waste Management

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## **MODULE I - STANDARD CONDITIONS**

### **Module I.**

#### **I.A. EFFECT OF PERMIT**

This Permit is issued pursuant to the Resource Conservation and Recovery Act (RCRA), as amended. Issuance of this Permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local law or regulations. Compliance with the terms of this Permit does not constitute a defense to any order issued or any action brought under Sections 3008(a), 3008(h), 3013, or 7003 of RCRA; Sections 106(a), 104, or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq., commonly known as CERCLA), or any other law providing for protection of public health or the environment. [R.61-79.270.4, 270.30(g)]

The Permittee shall perform postclosure care and corrective action in accordance with the Conditions of this Permit. Any storage, treatment, and/or disposal of hazardous waste not authorized in this Permit is prohibited, except as allowed by the South Carolina Hazardous Waste Management Regulations, R.61-79.

#### **I.B. PERMIT ACTIONS**

##### **I.B.1. Permit Modification, Revocation and Reissuance, and Termination**

This Permit may be modified, revoked and reissued, or terminated for cause as specified in R.61-79.270.41, 270.42, and 270.43. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any Permit Condition. [R.61-79.270.30(f)]

##### **I.B.2. Permit Renewal**

This Permit may be renewed as specified in Permit Condition I.E.2. Review of any application for a permit renewal shall consider improvements in the state of control and measurement technology, as well as changes in applicable regulations. [R.61-79.270.30(b)]

##### **I.B.3. Permit Expiration**

Pursuant to R.61-79.270.50, this Permit shall be effective for a fixed term not to exceed ten years. This Permit and all Conditions herein will remain in effect beyond the permit's expiration date, if the Permittee has submitted a timely, complete application (see R.61-79.270.10, 270.13 through 270.29) and, through no fault of the Permittee, the Department has not issued a new permit, as set forth in R.61-79.270.51.

#### **I.C. SEVERABILITY**

The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby.

#### **I.D. DEFINITIONS**

For purposes of this Permit, terms used herein shall have the same meaning as those in R.61-79 Parts 124, 260,

264, 266, 268, and 270, unless this Permit specifically provides otherwise; where terms are not defined in the regulations or the permit, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

I.D.1. Area of Concern (AOC)

For purposes of this Permit includes any area having a probable release of a hazardous waste or hazardous constituent which is not from a solid waste management unit and is determined by the Department to pose a current or potential threat to human health or the environment. Such areas of concern may require investigation and remedial action as required under Section 3005(c)(3) of the Resource Conservation and Recovery Act and R.61-79.270.32(b)(2) in order to ensure adequate protection of human health and the environment.

I.D.2. Certified Laboratory

For the purposes of this Permit means a laboratory that has been approved by the Department to perform specific analyses referenced in R.61-79.260 through R.61-79.270.

I.D.3. Compliance Period

For the purposes of the groundwater requirements of this Permit is the number of years equal to the active life of the unit prior to the Department's approval of certification of closure. The compliance period includes any period of waste management activity that may have occurred prior to permitting and begins when the owner/operator initiates a compliance monitoring program for groundwater pursuant to R.61-79.264.99.

I.D.4. Contamination

For purposes of this Permit refers to the presence of any hazardous constituent in a concentration which exceeds the naturally occurring concentration of that constituent in areas not affected by the facility.

I.D.5. Corrective Action

For purposes of this Permit, may include all corrective actions necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents at the facility, regardless of the time at which waste was placed in the unit, as required under R.61-79.264.100(b) and 264.101. Corrective action may address releases to air, soils, surface water sediment, groundwater, or subsurface gas.

I.D.6. Corrective Action Management Unit (CAMU)

For purposes of this Permit, includes any area within a facility that is designated by the Department under R.61-79.264 Subpart S for the purpose of implementing corrective action requirements under 264.101 and RCRA Section 3008(h). A CAMU shall only be used for the management of remediation wastes pursuant to implementing such corrective action requirements at the facility.

I.D.7. Department

For purposes of this permit means the Department of Health and Environmental Control, including personnel thereof authorized by the Board to act on behalf of the Department or Board.

I.D.8. Extent of Contamination

For the purposes of this Permit is defined as the horizontal and vertical area in which the

concentrations of hazardous constituents in the environmental media being investigated are above the naturally occurring concentration of that constituent in areas not affected by the facility.

I.D.9. Facility

For purposes of this Permit includes all contiguous property and structures, other appurtenances, and improvements on the property, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operation units (e.g. one or more landfills, surface impoundments, waste piles, or some combination of these). For the purpose of implementing corrective action under R.61-79.264.100 and R.61-79.264.101, a facility includes all contiguous property under the control of the owner or operator seeking a permit under Subtitle C of RCRA.

I.D.10. Hazardous Constituent

For purposes of this Permit are those substances listed in Appendix VIII of R.61-79.261 and Appendix IX of R.61-79.264.

I.D.11. Hazardous Waste Management Unit (HWMU)

For purposes of this Permit is a contiguous area of land on or in which hazardous waste is managed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples of hazardous waste management units include surface impoundments, waste piles, land treatment areas, landfill cells, incinerators, tanks and their associated piping and underlying containment system, and container storage areas. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are managed.

I.D.12. Interim Measures

For purposes of this Permit are actions necessary to minimize or prevent the further migration of contaminants and limit actual or potential human and environmental exposure to contaminants while long-term corrective action remedies are evaluated and, if necessary, implemented.

I.D.13. Land Disposal

For purposes of this Permit and R.61-79.268 means placement in or on the land except for a CAMU and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, underground mine or cave, or concrete vault or bunker intended for disposal purposes.

I.D.14. Landfill

For the purposes of this Permit includes any disposal facility or part of a facility where hazardous waste is placed in or on the land and which is not a pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit.

I.D.15. Postclosure Care Period

For the purpose of this Permit is a thirty year period beginning when a hazardous waste management unit is certified as closed and during which time the Permittee shall be required to maintain, monitor, and report in accordance with the appropriate requirements of R.61-79.264 Subparts F, K, L, M, N, and X. The postclosure care period is unit specific and may be more or

less than thirty years. The Department may modify the postclosure care period applicable to a unit if it finds that an extended or reduced period is sufficient to protect human health and the environment. [R.61-79.264.117]

#### I.D.16. Release

For purposes of this Permit includes any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of any hazardous waste or hazardous constituents.

#### I.D.17. Remediation Waste

For the purposes of this Permit includes all solid and hazardous wastes, and all media (including groundwater, surface water, soils and sediments) and debris, which contain listed hazardous wastes or which themselves exhibit a hazardous waste characteristic, that are managed for the purpose of implementing corrective action requirements under R.61-79.264.100, 264.101 and RCRA Section 3008(h). For a given facility, remediation wastes may originate only from within the facility boundary, but may include waste managed in implementing RCRA Sections 3004(v) or 3008(h) for releases beyond the facility boundary.

#### I.D.18. Schedule of Compliance

For the purposes of this Permit refers to a schedule of remedial measures included in this Permit, including an enforceable sequence of interim requirements (for example, actions, operations, or milestone events) leading to compliance with the Resource Conservation and Recovery Act and the South Carolina Hazardous Waste Management Regulations. [R.61-79.270.2]

#### I.D.19. Solid Waste

Means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under Section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).

#### I.D.20. Solid Waste Management Unit (SWMU)

For the purposes of this Permit includes any unit which has been used for the treatment, storage, or disposal of solid waste at any time from which hazardous constituents might migrate, irrespective of whether the unit is or ever was intended for the management of solid waste. RCRA hazardous waste management units are also solid waste management units. SWMUs include areas that have been contaminated by routine and systematic releases of hazardous waste or hazardous constituents, excluding one-time accidental spills that are immediately and adequately remediated and cannot be linked to solid waste management activities (e.g. product or process spills).

#### I.D.21. Temporary Unit (TU)

For the purposes of this Permit includes any temporary tanks and/or container storage areas used solely for treatment or storage of hazardous remediation wastes during remedial activities required under R.61-79.264.101 or RCRA Section 3008(h). Designated by the Department,

such units must conform to specific standards as specified in R.61-79.264.553.

#### I.D.22. Unit

For purposes of this Permit includes, but is not limited to, any landfill, surface impoundment, waste pile, land treatment unit, incinerator, injection well, tank, container storage area, septic tank, drain field, wastewater treatment unit, elementary neutralization unit, transfer station, or recycling unit.

### **I.E. DUTIES AND REQUIREMENTS**

#### I.E.1. Duty to Comply

The Permittee shall comply with the approved permit application and all Conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance, other than noncompliance authorized by an emergency permit, constitutes a violation of RCRA and the South Carolina Hazardous Waste Management Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application. [R.61-79.270.30(a)]

#### I.E.2. Duty to Reapply

If the Permittee intends to continue an activity allowed or required by this Permit after the expiration date of this Permit, the Permittee shall submit a complete application for a new permit at least one hundred eighty (180) days prior to permit expiration. The Permittee must comply with the public notice requirements of R.61-79.124.10. [R.61-79.270.10(h), 270.30(b)]

#### I.E.3. Obligation for Corrective Action

The Permittee is required to continue this Permit for any period necessary to comply with the corrective action requirements of this Permit. [R.61-79.264.101, 270.1(c), 270.51]

#### I.E.4. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the Conditions of this Permit. [R.61-79.270.30(c)]

#### I.E.5. Duty to Mitigate

In the event of noncompliance with this Permit, the Permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment. [R.61-79.270.30(d)]

#### I.E.6. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the Conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of a backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the Conditions of this Permit. [R.61-79.270.30(e)]

#### I.E.7. Duty to Provide Information

The Permittee shall furnish to the Department, within a reasonable time, any relevant information which the Department may request to determine whether cause exists for

modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Department, upon request, copies of records required to be kept by this Permit. [R.61-79.264.74(a), 270.30(h)]

#### I.E.8. Inspection and Entry

The Permittee shall allow an authorized representative of the Department, upon the presentation of credentials and other documents, as may be required by law, to: [R.61-79.270.30(i)]

- I.E.8.(a). Enter at reasonable times upon the Permittee's premises where a regulated activity is located or conducted, or where records must be kept under the Conditions of this Permit;
- I.E.8.(b). Have access to and copy, at reasonable times, any records that must be kept under the Conditions of this Permit;
- I.E.8.(c). Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices or operations regulated as required under this Permit; and
- I.E.8.(d). Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by RCRA, any substances or parameters at any location.

#### I.E.9. Monitoring and Records

- I.E.9.(a). Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste and/or contaminated media to be analyzed must be the appropriate method from Appendix I of R.61-79.261, the EPA Region IV Environmental Investigations Standard Operating Procedure and Quality-Assurance Manual (most recent version), or an equivalent method as specified in the waste analysis plan of the approved permit application, or otherwise approved by the Department.

Laboratory methods must be those specified in the most recent edition of Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), or an equivalent method approved by the Department, and must be performed by a laboratory certified pursuant to the State Environmental Laboratory Certification Regulations, R.61-81 and R.61-79.260.11. [R.61-79.270.30(j)(1)]

- I.E.9.(b). The Permittee shall retain the following at the facility, or at another location as approved by the Department:
  - I.E.9.(b)(i) records of all monitoring information required under the terms of this Permit, including all calibration and maintenance records,
  - I.E.9.(b)(ii) records of all original strip chart recordings for continuous monitoring instrumentation,
  - I.E.9.(b)(iii) copies of all reports and records required by this Permit and all data used to prepare them,



I.E.9.(b)(iv) records of all data used to complete the application for this Permit, and

I.E.9.(b)(v) certification required by R.61-79.264.73(b)(9), if applicable.

The Permittee shall retain these items for a period of at least three (3) years from the date of the sample, measurement, report, record, certification, or application, or until corrective action is completed, whichever date is later.

This period may be extended by request of the Department at any time and is automatically extended during the course of any unresolved enforcement action regarding this facility.

I.E.9.(c). Pursuant to R.61-79.270.30(j)(3), records of monitoring information shall specify:

I.E.9.(c)(i) The dates, exact place, and times of sampling or measurements;

I.E.9.(c)(ii) The individuals who performed the sampling or measurements;

I.E.9.(c)(iii) The dates analyses were performed;

I.E.9.(c)(iv) The individuals who performed the analyses;

I.E.9.(c)(v) The analytical techniques or methods used; and

I.E.9.(c)(vi) The results of such analyses.

I.E.9.(d). Monitoring results shall be reported at intervals specified by the Department. [R.61-79.270.30(l)(4)]

#### I.E.10. Reporting Planned Changes

The Permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions which may impact any Hazardous Waste Management Units (HWMUs), Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), or the areas contaminated by them. [R.61-79.270.30(l)(1)].

#### I.E.11. Reporting Anticipated Noncompliance

The Permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

#### I.E.12. Transfer of Permits

This Permit may be transferred to a new owner or operator only after notice to the Department pursuant to R.61-79.270.40 and only if the Permit is modified or revoked and reissued pursuant to R.61-79.270.41 to identify the new Permittee and incorporate such other requirements as may be necessary. Before transferring ownership or operation of the facility during its operating life, or of a disposal facility during the postclosure care period, the Permittee shall notify the new owner or operator in writing of the requirements of R.61-79.264 and 270, and this Permit.

#### I.E.13. Schedule of Compliance

Written notification of compliance or noncompliance with any item identified in the schedule of compliance Appendix D of this Permit shall be submitted according to each schedule date. If the Permittee does not notify the Department within fourteen (14) calendar days of its noncompliance with the schedule, the Permittee shall be subject to an enforcement action.

Submittal of a required item according to the schedule constitutes notification of compliance.

I.E.14. Imminent Hazard Reporting

The Permittee shall report to the Department <sup>1</sup> any noncompliance, imminent or existing hazard from a release of hazardous waste or hazardous constituents, or from a fire or explosion at the facility, which may endanger human health or the environment. The Permittee shall also report any fire or explosion at or near a permitted unit or other hazardous waste management area. Such information shall be reported orally within twenty-four (24) hours from the time the Permittee becomes aware of the circumstances. This report shall include the following:

I.E.14.(a)(i) Information concerning the release of any hazardous waste or hazardous constituents that may endanger public drinking water supplies.

I.E.14.(a)(ii) Information concerning the release or discharge of any hazardous waste, or hazardous constituents, or a fire or explosion at the facility, which could threaten the environment or human health outside the facility, or of any fire or explosion at or near a permitted unit or other hazardous waste management area at the facility.

I.E.14.(b). The description of the occurrence and its cause shall include:

I.E.14.(b)(i) Name, address, and telephone number of the owner or operator;

I.E.14.(b)(ii) Name, address, and telephone number of the facility;

I.E.14.(b)(iii) Date, time, and type of incident;

I.E.14.(b)(iv) Name and quantity of materials involved;

I.E.14.(b)(v) The extent of injuries, if any;

I.E.14.(b)(vi) An assessment of actual or potential hazard to the environment and human health outside the facility, and

I.E.14.(b)(vii) Estimated quantity and disposition of recovered material that resulted from the incident.

I.E.14.(c). A written report shall also be provided to the Department within fifteen (15) calendar days of the time the Permittee becomes aware of the circumstances. The written report shall contain the information specified under Permit Conditions I.E.14 and I.E.14.(b); a description of the noncompliance or imminent hazard and its cause; the

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<sup>1</sup> In this instance, the Emergency Response Section, the District, and the Bureau of Land and Waste Management permit writer, must be contacted. The Emergency Response toll free 24-hour number is 1-888-481-0125 (in the Columbia area, call 803-253-6488). Please note Emergency Response must be contacted immediately

periods of noncompliance (including exact dates and times); whether the noncompliance or imminent hazard has been corrected; and if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance or imminent hazard. [R.61-79.270.30(l)(6)]

**I.E.15. Manifest Discrepancy Report**

If a significant discrepancy in a manifest is discovered, the Permittee must attempt to reconcile the discrepancy. If not resolved within fifteen (15) days, the Permittee must submit a letter report, including a copy of the manifest, to the Department. [R.61-79.270.30(l)(7)]

**I.E.16. Unmanifested Waste Report**

This report must be submitted to the Department within fifteen (15) days of receipt of unmanifested waste. [R.61-79.270.30(l)(8)].

**I.E.17. Other Noncompliance**

The Permittee shall report all other instances of noncompliance not otherwise required to be reported above by Permit Conditions I.E.11 and I.E.14, at the time monitoring reports are submitted. The reports shall contain the information listed in Permit Condition I.E.14.(b), as applicable. [R.61-79.270.30(l)(10)]

**I.E.18. Other Information**

Whenever the Permittee becomes aware that he/she failed to submit any relevant facts, or submitted incorrect information in a permit application or in any report to the Department, the Permittee shall promptly submit such facts or information. [R.61-79.270.30(l)(11)]

**I.F. SIGNATORY REQUIREMENT**

All applications, reports, or information submitted to the Department shall be signed and certified in accordance with R.61-79.270.11 and 270.30(k).

**I.G. REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE DEPARTMENT**

All reports, notifications, or other information required by this Permit to be submitted to the Department should be sent to the Department by verifiable delivery at the following address:

**Attn: Richard Haynes, Director**

**Division Of Waste Management**

**Bureau Of Land And Waste Management**

**2600 Bull Street**

**Columbia, SC 29201**

**Phone: (803) 896-4000**

A copy of all reports, notifications, or other information required by this Permit to be submitted to the Department should also be sent to the US EPA, Region IV by verifiable delivery at the following address:

**U.S. Environmental Protection Agency**

**Attn: RCRA Branch Chief**

**RCRA Programs and Materials Management Branch**

**Atlanta Federal Center**

**61 Forsyth Street**

**Atlanta, GA 30303**

**Phone: (404) 562-8527**

**I.H. CONFIDENTIAL INFORMATION**

In accordance with R.61-79.270.12, the Permittee may claim confidential certain information required to be submitted by this Permit.

**I.I. DOCUMENTS TO BE MAINTAINED DURING POSTCLOSURE CARE PERIOD**

Until postclosure care activities are completed, certified by an independent registered professional engineer, and verified by the Department, the Permittee shall maintain at the facility the following documents and amendments, revisions, and modifications to these documents:

**I.I.1. Permit Application**

The approved permit application pursuant to R.61-79.270.2.

**I.I.2. All reports and documentation**

Regarding compliance with R.61-79.264.118 and this Permit during the postclosure care period.

**I.I.3. Contingency Plan**

As required by R.61-79.264.53(a) and this Permit.

**I.I.4. Operating record**

As required by R.61-79.264.73 and this Permit.

**I.I.5. Inspection schedules**

As required by R.61-79.264.15(b) and this Permit.

**I.I.6. Postclosure Plans**

As required by R.61-79.264.118, R.61-79.270.14(b)13 and this Permit.

**I.I.7. Documentation of compliance**

With R.61-79.264.119, R.61-79.264.120 and this Permit.

**I.I.8. Annually-adjusted cost estimates**

For facility postclosure as required by R.61-79.264.144(b) and this Permit.

**I.I.9. Corrective Action Plan(s) and reports**

As required by R.61-79.264.100 and 264.101 and this Permit

**I.I.10. Cost estimates for completion of corrective action**

As required by R.61-79.264.90(a)(2) and 264.101 and this Permit.

**I.I.11. Installation records**

For all monitoring wells and all groundwater elevation data collected during the postclosure care period.

I.I.12. Groundwater monitoring records

Required by R.61-79.264.100 and this Permit.

I.I.13. A survey plat and record

Of the type, location, and description of hazardous waste or hazardous constituents disposed of within the surface impoundment and landfill areas as required by R.61-79.264.119.

I.I.14. All other documents

Required by Permit Conditions I.E.9, I.E.10 and I.E.11.

## **MODULE II - GENERAL FACILITY CONDITIONS**

### **Module II.**

#### **II.A. DESIGN AND OPERATION OF FACILITY**

The Permittee shall construct, maintain and operate the facility in a manner to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment, as required by R.61-79.264.31.

#### **II.B. SECURITY**

The Permittee shall comply with the security provisions as specified in Section F of the approved Permit application and R.61-79.264.14(b) and (c). The Permittee shall maintain security at the facility during the postclosure care period, in accordance with the Postclosure Plan, Attachment 4, of the approved Permit application and R.61-79.264.117.

#### **II.C. GENERAL INSPECTION REQUIREMENTS**

The Permittee shall follow the general inspection requirements set out in R.61-79.264.15 and Section F of the approved Permit application. The Permittee shall remedy any deterioration or malfunction discovered by an inspection as required by R.61-79.264.15(c) and the Permit application. Records of inspections shall be kept as required by R.61-79.264.15(d).

#### **II.D. EMERGENCY CONTINGENCY PLAN**

##### **II.D.1. Implementation of Plan**

The Permittee shall immediately carry out the provisions of the Emergency Contingency Plan, Attachment 5 of the approved Permit application, whenever there is a fire, explosion, or release of hazardous waste or constituents that could threaten human health or the environment. As applicable, the plan must cover the requirements of R.61-79.264.50 through 264.56.

##### **II.D.2. Copies of Plan**

The Permittee shall comply with the requirements of R.61-79.264.53.

##### **II.D.3. Amendments to Plan**

The Permittee shall review and immediately amend, if necessary, the Emergency Contingency Plan, as required by R.61-79.264.54. Any amendment shall be subject to the requirements of R.61-79.270.41 and 270.42.

##### **II.D.4. Emergency Coordinator**

A trained emergency coordinator shall be available at all times in case of an emergency, as required by R.61-79.264.55.

#### **II.E. RECORD KEEPING AND REPORTING**

In addition to the record keeping and reporting requirements specified elsewhere in this Permit, the Permittee shall do the following:

##### **II.E.1. Operating Record**

The Permittee shall maintain a written operating record at the facility in accordance with R.61-79.264.73.

##### **II.E.2. Quarterly Report**

The Permittee shall comply with the quarterly reporting requirements of R.61-79.264.75.

**II.F. PERSONNEL TRAINING**

The Permittee shall conduct personnel training, as required by R.61-79.264.16. This training shall follow the outline described in Section H of the approved Permit application. The Permittee shall maintain training documents and records at the facility, as required by R.61-79.264.16(d) and (e).

## MODULE III - POSTCLOSURE CARE FOR SURFACE IMPOUNDMENT

### Module III.

#### III.A. MODULE HIGHLIGHTS

The conditions of this module apply to the general postclosure care requirements for one closed surface impoundment and one corrective action management unit as described below in Permit Condition III.B.

The surface impoundment managed waste methanol solutions prior to 1982. These methanol solutions were determined to be hazardous due to their corrosivity, as well as to the presence of spent non-halogenated solvents. The aeration basin was certified closed on November 3, 1987. As part of the closure process, the unit was reconfigured and lined with a double liner/leachate collection system for non-hazardous waste use. The surface impoundment now functions as part of Santolubes' process wastewater treatment system as an aeration basin. Because contaminated soils were left in place at the time of closure, and because elevated levels of hazardous constituents have been detected in groundwater downgradient of this unit, postclosure is required for this unit.

The Corrective Action Management Unit (CAMU) was constructed at the facility to manage approximately 5428 cubic yards of remediation wastes (i.e. wastewater treatment sludge and contaminated subsoils) excavated from solid waste management units (SWMUs) 2, 3, 4, 9, 10, 13, 14 and 25. The CAMU was constructed with a passive soil venting system to treat the more volatile constituents within the consolidated wastes, and within the insitu wastes remaining at SWMU 6,7, and 8 which are capped by the CAMU. The CAMU consists of Cells 1 and 2. Construction of Cell 1 which contains remediation wastes from SWMUs 2, 3, 4, 10, 13, and 25 was completed on March 12, 2003. Construction of Cell 2 which contains remediation wastes from SWMUs 9 and 14 was completed on August 12, 2005. Because remediation wastes and contaminated subsoils have been consolidated within the CAMU, and because groundwater underlying the CAMU has been impacted by facility activities, postclosure care is required for the CAMU. Conditions for postclosure care of the CAMU are described below in Permit Condition III.C.

#### III.B. UNIT IDENTIFICATION

The Permittee shall provide postclosure care for the hazardous waste management unit described below, subject to the terms and conditions of this permit.

Regulated Unit(s)	Dates Unit(s) Operated	Total Maximum Capacity	Description of Wastes Contained	Hazardous Waste Number
Hazardous Waste Surface Impoundment	1970 to 1987	750,000 gallons	Corrosive wastewater containing methanol, xylene, and toluene	D002 F003



### **III.C. POSTCLOSURE PROCEDURES AND USE OF PROPERTY**

#### **III.C.1. Postclosure Care Period for Hazardous Waste Management Unit**

The Permittee shall conduct postclosure care for the hazardous waste management unit described in Permit Condition III.B. above. Postclosure care will be conducted for thirty (30) years after the completion of closure, except that the thirty (30) year postclosure care period may be shortened upon application and demonstration, approved by the Department, that the facility is secure, or may be extended if the Department finds this is necessary to protect human health and the environment. Postclosure care shall be in accordance with R.61-79.264.117 - 120, this Permit, Section F of the approved permit application, and the Postclosure Plan contained in Attachment 4 of the approved permit application.

#### **III.C.2. Postclosure Care Period for CAMU**

The Permittee shall conduct postclosure care for the CAMU described in Permit Condition III.A. above. Postclosure care will be conducted for thirty (30) years after the completion of Cell 2 of the CAMU. Postclosure care will likely be extended if the Department finds this is necessary to protect human health and the environment. Postclosure care shall be in accordance with R.61-79.264.117 - 120, this Permit, Section F of the approved Permit Application and in **the Revised Request for Permit Modification Designation of a Corrective Action Management Unit at the Blackman Uhler Chemical Company, dated May 2001.**

#### **III.C.3. Groundwater Monitoring System**

The Permittee shall maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of R.61-79.264 Subpart F and Module IV of this Permit during the postclosure period. [R.61-79.264.117(a)(1)]

#### **III.C.4. Surface Impoundment Requirements**

The Permittee shall comply with the requirements for surface impoundments as follows: [R.61-79.264.228]

III.C.4.(a). Maintain the integrity and effectiveness of the liners/leachate collection system; including making repairs to the liner system, as necessary, to correct the effects of settling, subsidence, erosion, or other events;

III.C.4.(b). Maintain and monitor groundwater monitoring system and comply with all other applicable requirements of R.61-79.264 Subpart F:

III.C.4.(c). Prevent run-on and run-off from eroding or otherwise damaging the liners/leachate collection system.

#### **III.C.5. Landfill Requirements**

The Permittee shall comply with the requirements for landfills at the Corrective Action Management Unit as follows: [R.61-79.264.310(b)]

III.C.5.(a). Maintain the integrity and effectiveness of the final cover; including making repairs to the liner system, as necessary, to correct the effects of settling, subsidence, erosion, or other events;

III.C.5.(b). Prevent run-on and run-off from eroding or otherwise damaging the final cover;

III.C.5.(c). Prevent run-on and run-off from eroding or otherwise damaging the liners/leachate collection system.

### **III.D. LEAK CONTROL PROCEDURES**

The Permittee shall monitor the leak detection system of the surface impoundment for the presence of liquids daily during the active life of the facility. The Permittee shall completely remove all liquid from each leak detection system as expeditiously as possible. The Permittee shall manage this liquid as a hazardous waste only if the leachate is found to contain hazardous constituents at concentrations that would exceed the toxicity characteristic leaching procedure (TCLP) test. The Permittee shall mitigate leakage into the leak detection system.

III.D.1. The Permittee shall not allow liquid to accumulate to a depth of more than two inches over the bottom liner within the leachate collection system so as to minimize the head on the bottom liner.

III.D.2. The Permittee shall record the liquid level in the leachate collection sump, and the volume of any liquid removed from the leachate collection sump on a daily basis during the active life of the aeration basin.

III.D.3. The Permittee shall report the weekly liquid level recorded in the leachate collection sump, and the volume of any liquid removed from the leachate collection sump during the active life of the impoundment in the corrective action groundwater monitoring reports required by Permit Condition IV.L.

III.D.4. In the event of a sudden drop in the liquid level of the non-hazardous surface impoundment that is not known to be caused by changes in the flow into or out of the impoundment, or if the dike leaks, the Permittee shall remove the surface impoundment from service immediately and complete the following actions:

III.D.4.(a). Immediately shut off the flow or stop the addition of wastes into the impoundment;

III.D.4.(b). Immediately contain any surface leakage which has occurred or is occurring;

III.D.4.(c). Immediately stop the leak;

III.D.4.(d). Take any necessary steps to stop or prevent catastrophic failure; and,

III.D.4.(e). If a leak cannot be stopped by any other means, empty the impoundment.

III.D.5. A surface impoundment that has been removed from service pursuant to Permit Condition III.D.4. may be returned to service only if the portion of the impoundment which was failing is repaired and the following steps are taken:

III.D.5.(a). If the impoundment was removed from service as the result of actual or imminent dike failure, the dike's structural integrity must be recertified by a qualified, registered professional engineer.

III.D.5.(b). If the impoundment was removed from service as the result of a sudden drop in the liquid level, then for any existing portion of the impoundment, a liner must be

installed in compliance with R.61-79.264.228, and for any other portion of the impoundment, the repaired liner system must be certified by a qualified, registered professional engineer.

- III.D.6. If the impoundment is permanently removed from service prior to completion of the corrective action specified in Module IV of this permit, the Permittee must close the impoundment in accordance with the provisions of R.61-79.264.228 and continue to comply with the postclosure requirements contained in Permit Condition III.C.1 and III.C.2

### **III.E. INSPECTIONS**

#### **III.E.1. Components, Structures and Equipment**

The Permittee shall inspect the components, structures, and equipment at the site in accordance with R.61-79.264.117(a)(1)(ii) and the inspection schedule in Section F of the approved permit application and the approved Postclosure Plan (Attachment 4 of the approved permit application and postclosure plan provided in **the Revised Request for Permit Modification Designation of a Corrective Action Management Unit at the Blackman Uhler Chemical Company, dated May 2001.**

### **III.F. NOTICES AND CERTIFICATION**

#### **III.F.1. Use of units**

The Permittee shall not allow any use of the units designated in Permit Condition III.B. which will disturb the integrity of the final cover, liners, any components of the containment system, or the function of the facility's monitoring systems during the postclosure care period. [R.61-79.264.117(c)]

#### **III.F.2. Amendments to Postclosure Plan**

The Permittee must request a permit modification to authorize a change in the approved postclosure plan. This request must be in accordance with applicable requirements of R.61-79 Parts 124 and 270, and must include a copy of the proposed amendments to the application for approval by the Department. The Permittee shall request a permit modification whenever changes in operating plans or facility design affect the postclosure plan, or other events occur during the active life of the facility that also affect the postclosure plan. The Permittee must submit a written request for a permit modification at least sixty (60) days prior to the proposed change in facility design or operation, or no later than sixty (60) days after an unexpected event has occurred which has affected the postclosure plan. [R.61-79.264.118(d)]

#### **III.F.3. Removal Request**

If the Permittee or any subsequent owner or operator of the land upon which the hazardous waste disposal unit is located wishes to remove hazardous wastes and hazardous waste residues, the liner, if any; or contaminated soils, then he shall request a modification to this postclosure permit in accordance with the applicable requirements in R.61-79.124 and 270. The Permittee or any subsequent owner or operator of the land shall demonstrate that the removal of hazardous wastes will satisfy the criteria of R.61-79.264.117(c). [R.61-

79.264.119(c)]

III.F.4. Certification of Completion of Postclosure Care

No later than sixty (60) days after completion of the established postclosure care period for each hazardous waste disposal unit, the Permittee shall submit to the Department, by registered mail, a certification that the postclosure care for the hazardous waste disposal unit was performed in accordance with the specifications in the approved Postclosure Plan. The certification must be signed by the Permittee and an independent registered professional engineer. Documentation supporting the independent registered professional engineer's certification must be furnished to the Department upon request until the Department releases the Permittee from the financial assurance requirements for postclosure care under R.61-79.264.145(i). [R.61-79.264.120]

**III.G. COST ESTIMATE FOR FACILITY POSTCLOSURE**

III.G.1. Most Recent Cost Estimate

The Permittee's most recent postclosure cost estimate, prepared in accordance with R.61-79.264.144(a) is specified in Attachment 6 of the approved permit application.

III.G.2. Cost Estimate Annual Adjustment

The Permittee must adjust the postclosure cost estimate for inflation within thirty (30) days after the close of the firm's fiscal year and before the submission of the updated information specified in 264.145(f)(5) [R.61-79.264.144(b)].

III.G.3. Cost Estimate Modification

The Permittee must revise the postclosure cost estimate whenever there is a change in the facility's Postclosure Plan, as required by R.61-79.264.144(c) and R.61-79.270 Subpart D.

III.G.4. Cost Estimate Record

The Permittee must keep at the facility the latest postclosure cost estimate as required by R.61-79.264.144(d).

**III.H. FINANCIAL ASSURANCE FOR FACILITY POSTCLOSURE CARE**

The Permittee shall demonstrate continuous compliance with R.61-79.264.145 by providing documentation of financial assurance as required by R.61-79.264.151 in at least the amount of the cost estimates required by Permit Condition III.G. Changes in financial assurance mechanisms must be approved by the Department pursuant to R.61-79.264.145.

**III.I. INCAPACITY OF OWNERS OR OPERATORS, GUARANTORS, OR FINANCIAL INSTITUTIONS**

The Permittee shall comply with R.61-79.264.148, whenever necessary.

## **MODULE IV - GROUNDWATER REQUIREMENTS**

### **Module IV.**

#### **IV.A. MODULE HIGHLIGHTS**

The conditions of this module describe groundwater monitoring and corrective action programs. The groundwater monitoring portion of the Permit describes the location, number, and depths of groundwater monitoring wells; identifies which wells are upgradient and downgradient; establishes a list of hazardous constituents and concentration limits which must be achieved through corrective action; defines the length of the compliance period; specifies the sampling and analysis protocols for the groundwater corrective action monitoring program, the statistical evaluations to be conducted, and the procedures for modifying the permit if changes to the groundwater corrective action monitoring program are necessary. The groundwater corrective action portion of the permit consists of a description of the overall strategy for corrective action and routine evaluation of the effectiveness of the groundwater remedial system.

#### **IV.B. POINT OF COMPLIANCE**

The Point of Compliance (POC) is a vertical surface located at the hydraulically downgradient limit of the Waste Management Area (WMA) that extends down to the base of the uppermost aquifer underlying the regulated unit. The WMA, as delineated in Part A, Item 12 of the permit application includes one closed surface impoundment (the aeration basin). In map view, the POC is represented in Figure 1 of this permit as a line running through those wells listed as point of compliance wells in Table IV-A (Monitoring Well System) of this Permit Module. Vertically, the POC extends into the top of the fractured bedrock, which is identified in the permit application as the base of the uppermost aquifer.

#### **IV.C. GROUNDWATER PROTECTION STANDARD**

The Permittee shall ensure that the Groundwater Protection Standard (GWPS), as required under R.61-79.264.92, is being met or that remedial actions are being taken to reduce contaminant levels to meet standards. The GWPS shall consist of the hazardous constituents and their corresponding concentration limits listed in Table IV-B this Permit Module, as established under R.61-79.264.93 and R.61-79.264.94.

#### **IV.D. COMPLIANCE PERIOD**

The Permittee shall comply with the applicable requirements of R.61-79.264 Subpart F for the duration of the compliance period. The compliance period began on July 1, 1990, and ended on July 1, 2007. The compliance period has been extended until it can be demonstrated that the appropriate groundwater protection standards have not been exceeded for three (3) consecutive years at the point of compliance

#### **IV.E. WELL LOCATION, INSTALLATION, AND CONSTRUCTION**

The Permittee shall design, install and/or maintain a groundwater monitoring system to comply with applicable requirements of R.61-79.264 Subpart F and as specified below.

##### **IV.E.1. Point of Compliance Well System**

The appropriately designated monitoring wells listed in Table IV-A will be used to monitor groundwater quality at the POC. These monitoring wells constitute the POC monitoring well system.

##### **IV.E.2. Background Monitoring Wells**

The appropriately designated monitoring wells listed in Table IV-A will be used to monitor

background groundwater quality. These monitoring wells constitute the background monitoring well system.

IV.E.3. Plume Assessment Wells

The appropriately designated monitoring wells listed in Table IV-A shall be used to monitor the contaminant plume movement and to assess the effectiveness of the corrective action program.

IV.E.4. Additional Wells

The Permittee shall install additional wells as necessary to maintain compliance with R.61-79.264 Subpart F requirements. A proposal for the design, location and installation of any additional well(s) shall be submitted to the Department for approval at least 45 days prior to planned installation. Written approval must be obtained prior to installation of any monitoring well.

IV.E.5. Well Design, Installation and Maintenance

The Permittee shall ensure that all wells are designed, installed, and maintained such that groundwater samples are representative of the true water quality. Additionally, the wells shall be designed, installed and monitored in such a manner to prevent interconnection between different hydrologic units. Failure of any well(s) to meet the standards described herein shall not interfere with the groundwater monitoring or corrective action programs.

IV.E.6. Well Construction Details

The Permittee shall report the surveyed elevation of monitoring well(s) to the nearest 0.01 foot within forty-five (45) days of installation along with as-built drawings and lithologic logs. The Permittee shall also report the total well depth, screened interval, elevation of the top of casing, ground surface and protective casing.

IV.E.7. Total Well Depth

The Permittee shall measure total well depth annually and redevelop any monitoring well when sediment has entered the well and accumulated to a depth of one foot; or, the accumulated sediment blocks twenty percent of the screen length, whichever is less. The Permittee shall redevelop any well exhibiting a significant decrease in yield, or a significant increase in recovery time.

IV.E.8. Well Abandonment

The Permittee shall properly abandon any well(s) not meeting the standard of Permit Condition IV.E.5. A proposal for specific well abandonment procedures shall be submitted to the Department for approval at least thirty (30) days prior to beginning abandonment procedures.

**IV.F. SAMPLING AND ANALYSIS PROCEDURES**

The Permittee shall use the following techniques and procedures when obtaining and analyzing groundwater samples from the groundwater monitoring wells described in Permit Condition IV.E. to provide a reliable indication of groundwater quality as required under R.61-79.264.97(d) and (e).

IV.F.1. Sampling Procedures

Groundwater samples shall be collected, preserved, and shipped in accordance with the procedures specified in Attachment 4 of the permit application.

IV.F.2. Sampling Frequency

The Permittee shall ensure that the frequency of sample collection and the wells to be sampled are in accordance with the Groundwater Monitoring Schedule, Table IV-C of this permit module. The Permittee shall monitor groundwater quality throughout the compliance period to demonstrate conformance with the GWPS.

#### IV.F.3. Chain of Custody

Groundwater samples shall be tracked and controlled using the chain-of-custody procedure specified in Attachment 4 of the Permit Application

#### IV.F.4. Analysis

Samples shall be analyzed according to Attachment 4 of the permit application or the most current final version of EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), using whichever procedure is more recent at the time of analysis. For those constituents that have established Maximum Contaminant Levels (MCL) or Preliminary Remediation Goals (PRG), the analytical method chosen must be capable of achieving a Practical Quantitation Limit (PQL) below the established MCL or PRG. For those constituents which do not have an established MCL or PRG, the analytical method must achieve the lowest reasonably achievable PQL based on instrumentation and analytical method.

#### IV.F.5. Change in Analytical Laboratory

Whenever the Permittee changes analytical contractors, the Permittee shall submit to the Department within thirty (30) days of such a change a copy of the new laboratory's South Carolina certification to be included in the permit application. This certification must state the expiration date, analytical test methods and parameters for which the laboratory is certified. The Department will evaluate the new program and determine if it differs significantly from the program in the approved permit application. If the program differs significantly, the Department will notify the Permittee and require submittal of a permit modification pursuant to R.61-79.270.41.

#### IV.F.6. Annual Appendix IX Analyses

Groundwater samples from the Point of Compliance wells (GM-2, GM-12, GM-13, GM-21, and GM-22) will be analyzed on a 5-year rotating frequency for Appendix IX constituents during the First Quarter of each year so that at least one Point of Compliance well is sampled each year. Groundwater samples will be analyzed for the constituents contained in R.61-79.264 Appendix IX (Groundwater Monitoring List), in order to determine whether additional hazardous constituents are present in the uppermost aquifer.

IV.F.6.(a). If R.61-79.264 Appendix IX constituents are detected pursuant to Permit Condition IV.F.6. that were not identified as hazardous constituents in the GWPS, then the Permittee may resample within one (1) month to confirm their presence. If the Permittee chooses not to resample, the original detections will be considered valid detections. If the presence of new hazardous constituents are confirmed by resampling, or the Permittee chooses not to resample, then the Permittee shall report the concentrations of these constituents to the Department in writing within seven (7) days after receipt of analytical data. The Permittee must immediately incorporate these new constituents within the groundwater monitoring program.

IV.F.6.(b). For each R.61-79.264 Appendix IX constituent identified at the point of compliance pursuant to Permit Condition IV.F.6., the Permittee shall determine whether the

concentration detected is elevated with respect to background. If the concentration detected at the point of compliance is determined to be statistically significant with respect to background, the new constituent will be added to the GWPS. Within ninety (90) days of completing the required statistical evaluation, the Permittee shall submit an application for a permit modification to incorporate the new constituents, along with their concentration limits, into the GWPS of Permit Condition IV.C.

#### IV.F.7. Management of Contaminated Media

The Permittee shall treat, store and/or dispose of all contaminated groundwater in accordance with all applicable federal, state and local requirements.

### **IV.G. BACKGROUND GROUNDWATER QUALITY**

The Permittee shall establish background groundwater quality in accordance with R.61-79.264.97 by collecting and analyzing groundwater samples from background groundwater monitoring wells identified in Table IV-A and in accordance with the Groundwater Monitoring Schedule, Table IV-C. Samples shall be collected and reported to the Department in accordance with Permit Conditions IV.F and IV.K.

### **IV.H. GROUNDWATER ELEVATION**

The Permittee shall measure and record the groundwater elevation in all monitoring wells listed in Table IV-A quarterly. The data shall be collected within a twenty-four (24) hour time span. Within thirty (30) days of completing these measurements, the Permittee shall use the water level data to evaluate the direction and rate of groundwater flow and determine whether the requirements for locating monitoring wells continue to be satisfied. If the Permittee determines that the conditions are no longer satisfied, the Permittee must submit a proposal to the Department within thirty (30) days to modify the monitoring system. If the modification is significant, the Permittee shall be required to submit an application for permit modification. The Permittee shall use the water level data to generate groundwater potentiometric maps and will report the water level data with the groundwater quality analytical results as specified in Permit Condition IV.K.

### **IV.I. STATISTICS**

Pursuant to R.61-79.264.97(h) and R.61-79.264.97(i), an appropriate statistical procedure must be proposed prior to the termination of groundwater corrective action. The proposed statistical method must compare compliance point data to the concentration limits in the GWPS. Until such time that an appropriate statistical method has been approved by the Department, the effectiveness of the corrective action program shall be evaluated semi-annually using graphical analysis of time verses concentration trends in strategic monitoring wells. These trend analyses shall be submitted in the corrective action groundwater monitoring reports required by Permit Condition IV.K.

### **IV.J. GROUNDWATER CORRECTIVE ACTION PROGRAM**

The Permittee shall design, implement, and maintain a groundwater corrective action program as required under R.61-79.264.100 and R.61-79.264.101.

#### IV.J.1. Corrective Action at the Point of Compliance

The Permittee shall design, implement, and maintain a corrective action program that prevents hazardous constituents from exceeding the GWPS as specified in Permit Condition IV.C. at the POC.

#### IV.J.2. Corrective Action Beyond the Point of Compliance

The Permittee must conduct a corrective action program to remove and treat any hazardous constituents that exceed the GWPS as specified in Permit Condition IV.C. in groundwater



between the compliance point and the downgradient property boundary, and beyond the property boundary where necessary to protect human health and the environment in accordance with R.61-79.264.100(e).

IV.J.3. Maintenance of the Corrective Action System

The Permittee shall ensure that the groundwater corrective action system (i.e. groundwater recovery components and ancillary treatment equipment) is maintained to operate as specified in the approved Corrective Action Plan (CAP), Section E-8 of the Permit Application.

IV.J.4. Corrective Action System

Groundwater corrective action shall, at a minimum, consist of Groundwater Recovery and Treatment in accordance with the approved CAP. The approved CAP is located in Section E-8 of the permit application. The Corrective Action System will also consist of Land Use Controls (Groundwater Use Restrictions) as specified in the Land Use Control Management Plan provided in the permit application. Permittee must maintain the continuous extraction and treatment of contaminated groundwater from downgradient recovery wells GM-20 and GM-24 in accordance with the approved CAP.

IV.J.5. Continuation of Corrective Action

The Permittee must continue corrective action during the compliance period to the extent necessary to ensure that the GWPS is not exceeded. In accordance with R.61-79.264.100(f), the compliance period is automatically extended, if necessary, until the GWPS has not been exceeded for three (3) consecutive years.

IV.J.6. Modification of the Corrective Action System

If the Permittee determines that the corrective action program no longer satisfies the requirements of R.61-79.264.100, within ninety (90) days of such a determination, the Permittee must submit a permit modification request pursuant to R.61-79.270.42 to make any appropriate changes to the corrective action system.

**IV.K. RECORDKEEPING AND REPORTING**

IV.K.1. Operating Record

The Permittee shall enter all monitoring, testing, analytical, and corrective action data obtained pursuant to Permit Conditions IV.A. through IV.K. into the operating record as required by R.61-79.264.73(b)(6).

IV.K.2. Annual Report

On or before March 1 of each year, the Permittee shall submit a detailed annual report describing the effectiveness of the corrective action program for the previous calendar year. This report shall include, at a minimum, all of the following:

IV.K.2.(a). Groundwater elevation data collected during the reporting period in table form.

Groundwater quality data in table form for all constituents sampled during the reporting period. Copies of the chain of custody, field records and laboratory data sheets, to include the date of extraction and date of analysis for each sample, shall be submitted;

IV.K.2.(b). Potentiometric maps depicting groundwater flow directions for each hydrogeologic unit based on gradients for each quarter shall be submitted. Potentiometric maps

- shall include all plume assessment, background, and recovery wells identified in Table IV-A. An evaluation of any significant changes in gradients or flow direction shall be included;
- IV.K.2.(c). Isoconcentration maps depicting the distributions of pertinent parameters. All plume assessment, background and recovery wells listed in Table IV-A shall be depicted. Surface water sampling locations shall be depicted on the isoconcentration maps. Large scale maps should be used;
  - IV.K.2.(d). Tabulated volumetric data and flow rates for the corrective action system (monthly and cumulative);
  - IV.K.2.(e). Recharge data (inches of rainfall during the reporting period);
  - IV.K.2.(f). Dates of any corrective action system down time with explanations; Description of any minor modifications or repairs to the groundwater monitoring and corrective action systems.
  - IV.K.2.(g). Detailed narrative evaluating and discussing the effectiveness of the corrective action system. This should include a discussion of time trend analyses to date for the past year plus the zone of capture and drawdown for the corrective action system. All portions of the groundwater contaminant plume located outside the zone of capture of the recovery system must be identified. Improvements for achieving capture of all portions of the plume that exceed the GWPS (Table IV-B) must be discussed. Proposals for modification of the corrective action system must be submitted under separate cover;
  - IV.K.2.(h). Hydrographs for all point of compliance wells and strategic plume assessment wells (Table IV-A) depicting groundwater elevations through time. A table to reference actual calendar dates corresponding to sampling events shall also be submitted to aid in interpreting the hydrographs for each well. Nested wells may be included on the same hydrograph;
  - IV.K.2.(i). Time verses concentration plots for a representative number of plume assessment wells identified in Table IV-A. These plots shall depict the concentration of total volatile organic compounds and any other specific parameter that may be pertinent to monitoring the effectiveness of the corrective action system;
  - IV.K.2.(j). A statistical evaluation of water quality data and water elevation data for significant changes. This evaluation should be conducted on the point of compliance wells (Table IV-A) and a representative number of plume assessment wells;
  - IV.K.2.(k). Hydrogeologic cross sections for each sampling event during the reporting period depicting the distribution of total volatile organic compounds and any other specific parameter that may be pertinent for monitoring the effectiveness of the corrective action system. At least one cross section should be oriented perpendicular through the point of compliance wells and include the background groundwater monitoring well.
  - IV.K.2.(l). Determination of the extent and severity of groundwater contamination. This may be delineated on the large scale isoconcentration maps and cross sections;
  - IV.K.2.(m). Table depicting all constituents from R.61-79.264 Appendix IX detected in

groundwater samples since the initiation of interim status. This table should include, at minimum, well identification, date of sample collection, parameter detected, concentration levels, date of resample and analytical results;

- IV.K.2.(n). A table listing all production, groundwater recovery, and groundwater monitoring wells, along with pertinent construction details. This table must also list all wells installed, abandoned, resurveyed, or otherwise modified during the year. A map(s) should be included depicting the locations of the wells listed on this table.

#### **IV.L. DUTY OF PERMITTEE**

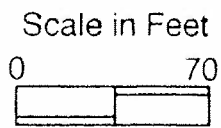
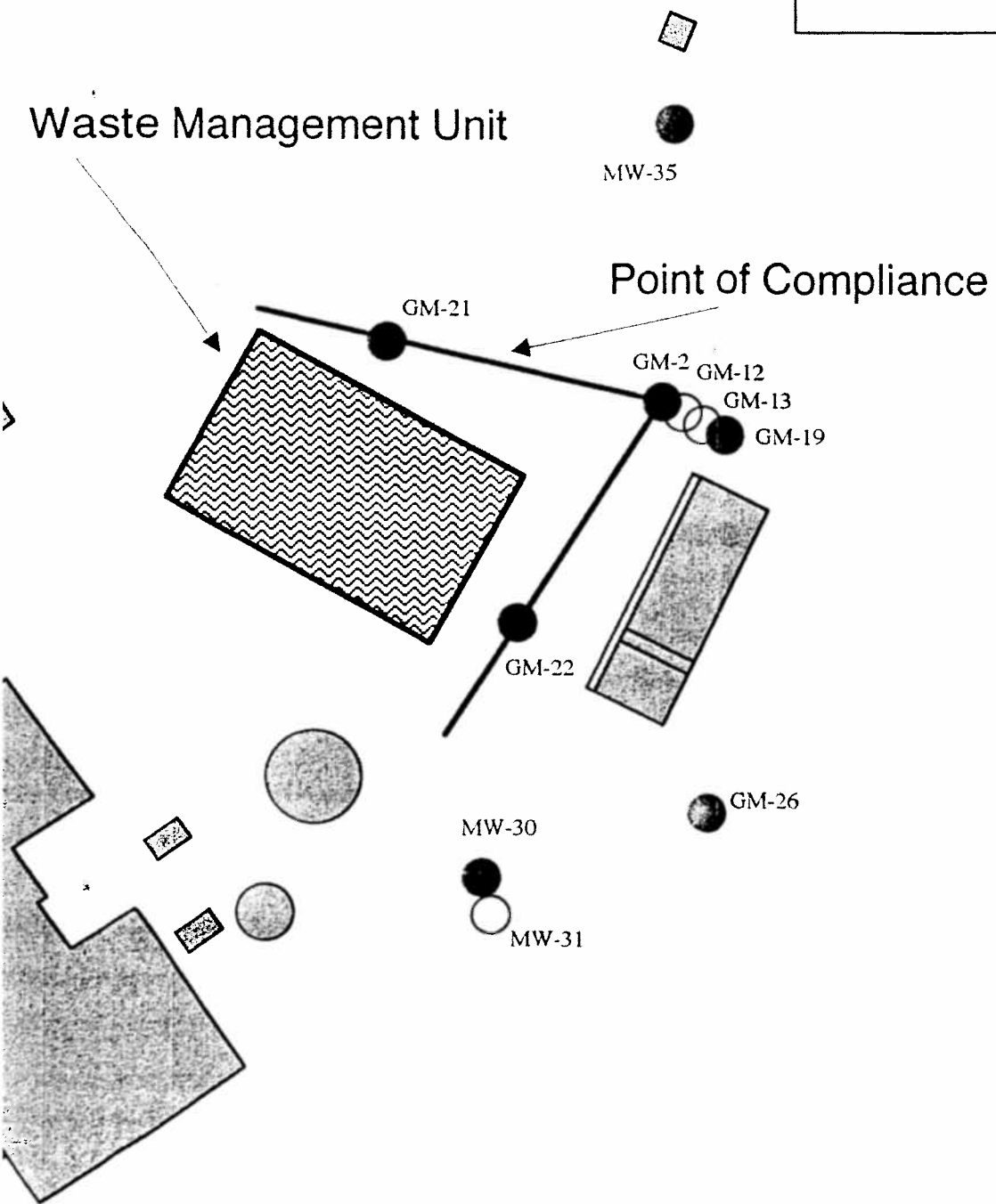
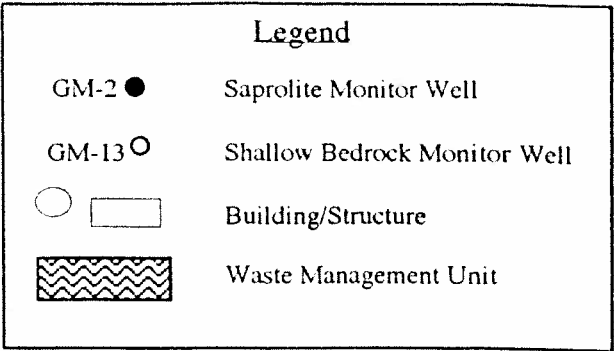
The Permittee shall assure that the groundwater monitoring and corrective action programs are in compliance with the requirements of R.61-79.264 Subpart F throughout the operating, closure, and post-closure periods.

##### **IV.L.1. Permit Modification**

If the Permittee at any time determines that the corrective action program required by this Permit no longer satisfies the requirements of R.61-79.264.100 and R.61-79.264.101 for releases of hazardous constituents listed in Table IV-B (GWPS) that originate from the regulated unit, the Permittee must within ninety (90) days submit an application for a permit modification to make any appropriate changes in the program, as required under R.61-79.264.100(h).

##### **IV.L.2. Termination of Corrective Action**

If the GWPS is met in accordance with R.61-79.264.100 and R.61-79.264.101, the Permittee may submit an application for a permit modification pursuant to R.61-79.270.41 to terminate the corrective action program and establish a groundwater compliance monitoring program.



**Figure 1: Location of Waste Management Area and Point of Compliance.**  
 Santolubes Manufacturing, LLC  
 Spartanburg, South Carolina

**TABLE IV-A**

**Monitoring Well System**

**Santolubes Manufacturing, LLC**

**SCD 003 349 065**

**Spartanburg County**

Point of Compliance Wells	GM-2, GM-12, GM-13, GM-21, GM-22
Background Monitoring Wells	GM-1
Groundwater Recovery Wells	GM-18 (inactive), GM-20, GM-24
Plume Assessment Wells	GM-3, GM-4, GM-5, GM-6, GM-7, GM-8, GM-9, GM-11, GM-14, GM-15, GM-16, GM-17, GM-18, GM-23, GM-24, GM-25, GM-26, GM-26B, MW-27, MW-27B, MW-28, MW-29, MW-29B, MW-30, MW-31, MW-32, MW-33, MW-34, MW-34B, MW-35, MW-36, MW-37, MW-37B, MW-38, MW-38B, MW-39, MW-39B, MW-40B, MW-41, MW-41B

**TABLE IV-B**

**Groundwater Protection Standard**

**Monitoring Well System**

**Santolubes Manufacturing, LLC**

**SCD 003 349 065**

<u>Parameter</u>	<u>Concentration Limit (mg/L)</u>
<b><u>Volatile Organics (EPA Method 8260B)</u></b>	
Acetone	22 mg/L <sup>2</sup>
Benzene	0.005 mg/L <sup>1</sup>
2-Butanone (MEK)	7.1 mg/L <sup>2</sup>
Chlorobenzene	0.1 mg/L <sup>1</sup>
1,4-Dioxane	0.05 mg/L <sup>4</sup>
Ethylbenzene	0.7 mg/L <sup>1</sup>
4-Methyl-2-pentanone	2 mg/L <sup>2</sup>
Tetrachloroethene	0.005 mg/L <sup>1</sup>
Toluene	1 mg/L <sup>1</sup>
trans-1,2-Dichloroethene	0.1 mg/L <sup>1</sup>
Trichloroethene	0.005 mg/L <sup>1</sup>
Vinyl Chloride	0.002 mg/L <sup>1</sup>
Total Xylenes	10 mg/L <sup>1</sup>
<b><u>Semi-Volatile Organics (EPA Method 8270D)</u></b>	
Acenaphthene	3.7 mg/L <sup>2</sup>
Aniline	0.012 mg/L <sup>2</sup>
5-Chloro-2-methylbenzenamine	0.01 mg/L <sup>3</sup>
p-Chloro-m-cresol	3.7 mg/L <sup>2</sup>
p-Chloroaniline	0.01 mg/L <sup>4</sup>
1,4-Dichlorobenzene	0.075 mg/L <sup>2</sup>
2,4-Dichlorophenol	0.11 mg/L <sup>2</sup>
Phenol	11 mg/L <sup>2</sup>
4-Methylphenol	0.18 mg/L <sup>2</sup>
5-Nitro-o-toluidine	0.01 mg/L <sup>4</sup>
o-Toluidine-hydrochloride	0.014 mg/L <sup>4</sup>
o-Toluidine	0.01 mg/L <sup>3</sup>

1- MCL Maximum Contaminant Level as established in the USEPA Drinking Water Regulations and Health Advisories (updated June 2003)

2- Tapwater Regional Screening Levels (RSLs) (updated June 2011)

3- Laboratory Reporting Limit (Rogers & Callcott - April 2011)

4- Tapwater RSLs lower than lab Reporting Limit, Concentration Limit listed as the lab Reporting Limit (Rogers & Callcott - April 2011)

**TABLE IV-C**  
**Groundwater Monitoring Schedule**  
**Santolubes Manufacturing, LLC**  
**SCD 003 349 065**  
**Spartanburg County**

Well Number	Well Type	Even Year		Odd Year	
		First Quarter	Third Quarter	First Quarter	Third Quarter
GM-1	Saprolite	GWPS			
GM-2	Saprolite	*Y1 APPN IX		*Y1 APPN IX	
GM-3	Saprolite				
GM-4	Saprolite				GWPS
GM-5	Saprolite		GWPS		GWPS
GM-6	Saprolite				GWPS
GM-7	Saprolite	GWPS			
GM-8	Shallow Bedrock				GWPS
GM-9	Saprolite			GWPS	
GM-11	Shallow Bedrock				GWPS
GM-12	Saprolite	*Y2 APPN IX		*Y2 APPN IX	
GM-13	Shallow Bedrock	*Y3 APPN IX		*Y3 APPN IX	
GM-14	Shallow Bedrock				GWPS
GM-15	Saprolite			GWPS	
GM-16	Saprolite		GWPS		
GM-17	Saprolite		GWPS		
GM-18	Deep Bedrock	GWPS		GWPS	
GM-20	Deep Bedrock	GWPS		GWPS	
GM-21	Saprolite	*Y4 APPN IX		*Y4 APPN IX	
GM-22	Saprolite	*Y5 APPN IX		*Y5 APPN IX	
GM-23	Saprolite				
GM-24	Deep Bedrock	GWPS		GWPS	GWPS
GM-25	Saprolite	GWPS			
GM-26	Saprolite				
GM-26B	Shallow Bedrock				GWPS
MW-27	Saprolite		GWPS		
MW-27B	Shallow Bedrock		GWPS		
MW-28	Saprolite				
MW-29	Saprolite				GWPS
MW-29B	Shallow Bedrock		GWPS		
MW-30	Saprolite		GWPS		
MW-31	Deep Bedrock		GWPS		
MW-32	Saprolite				
MW-33	Shallow Bedrock	GWPS			GWPS
MW-34	Saprolite			GWPS	
MW-34B	Shallow Bedrock			GWPS	
MW-35	Saprolite	GWPS			
MW-36	Saprolite		GWPS		
MW-37	Saprolite			GWPS	
MW-37B	Shallow Bedrock			GWPS	
MW-38	Saprolite	GWPS			
MW-38B	Shallow Bedrock	GWPS			
MW-39	Saprolite			GWPS	
MW-39B	Shallow Bedrock			GWPS	
MW-40B	Shallow Bedrock				GWPS
MW-41	Saprolite		GWPS		
MW-41B	Shallow Bedrock		GWPS		

PS = Ground Water Protection Standard Constituents

PPN IX = 1 of 5 wells sampled each 1st quarter;

var rotation is follows: Y1 = GM-2, Y2 = GM-12, Y3 = GM-13, Y4 = GM-21, Y5 = GM-22

## **MODULE V - CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS & AREAS OF CONCERN**

### **Module V.**

Between 1995 and 2009 remedial activities were conducted at the SWMUS and AOCs at the facility that were identified by Corrective Measures Studies (CMS) as requiring corrective action. The remedial activities consisted of waste excavation and consolidation with a corrective action management unit (CAMU), capping in place, and land use controls. These remedial activities are incorporated into this permit as the final remedies for the following SWMUs and AOCs:

**Waste Excavation and Consolidation within a CAMU:** SWMUs 2, 3, 4, 6, 7, 8, 9, 10 (includes wastes from SWMU 25), 13, and 14

**Capping in Place:** SWMUs 1, 5, 26 and Building 8 AOC

**Land Use Controls:** SWMUs 1, 2, 3, 4, 5, 6, 7, 8, 26, and the Building 8 AOC

**SWMU 24 (Process Sewer System):** Replacement of Lines

Releases of hazardous constituents from the SWMUs and AOCs at the facility impacted the uppermost aquifer and bedrock aquifer. The existing groundwater recovery and treatment program described in Permit Condition IV.J.4 is effective in reducing groundwater contamination beneath the SWMUs and AOCs to acceptable levels and preventing the movement of groundwater offsite. Therefore, the existing groundwater recovery and treatment program (GM-20 and GM -24) is incorporated into this permit as the final remedy for groundwater resulting from releases at the SWUMs and AOCs. Land use controls will also be implemented to prevent the use of groundwater at the facility.

### **V.A. APPLICABILITY**

The objective of the corrective action program at a hazardous waste management facility is to evaluate the nature and extent of releases of hazardous waste and/or constituents, and if necessary, implement corrective measures to protect human health and the environment. The Permittee is required to implement corrective action in accordance with R.61-79.264.101 and the conditions of this Permit. The Permittee shall follow applicable guidance, including but not limited to the RCRA Corrective Action Plan, EPA 520-R-94-004, dated May 1994 (most recent version).

The Permit Conditions of this Module apply to:

#### **V.A.1. SWMUs and AOCs Identified by the RFA:**

The solid waste management units (SWMUs) and areas of concern (AOCs) identified by the initial RCRA Facility Assessment, any subsequent investigations, or other means, as listed in Appendix A – Solid Waste Management Unit and Area of Concern Summary.

#### **V.A.2. Additional SWMUs or AOCs**

Any additional SWMUs or AOCs discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means. As used in this part of the Permit, the terms “discover”, “discovery”, or “discovered” refer to the date on which the Permittee or a



Department representative either, (1) visually observes evidence of a new SWMU or AOC, (2) visually observes evidence of a previously unidentified release of hazardous constituents to the environment, or (3) receives information which suggests the presence of a new release of hazardous waste or hazardous constituents to the environment.

V.A.3. Contamination Beyond Facility Boundary

The Permittee shall implement corrective actions beyond the facility boundary where necessary to protect human health and the environment, unless the Permittee demonstrates to the satisfaction of the Department that, despite the Permittee's best efforts, as determined by the Department, the Permittee was unable to obtain the necessary permission to undertake such actions. The Permittee is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off site access is denied. On-site measures to address such releases will be determined on a case-by-case basis. Assurances of financial responsibility for completion of such off-site corrective action will be required.

**V.B. NOTIFICATION AND ASSESSMENT REQUIREMENTS FOR NEWLY IDENTIFIED SWMUs AND AOCs**

V.B.1. Notification

The Permittee shall notify the Department in writing, within fifteen (15) calendar days of discovery, of any additional AOCs and/or SWMUs as discovered under Permit Condition V.A.2. The notification shall include, at a minimum, a unique sequential identification number, the location of the SWMU or AOC and all available information pertaining to the nature of the release (e.g., media affected, hazardous constituents released, magnitude of release, etc.).

V.B.2. Assessment Report

The Permittee shall prepare and submit to the Department, within ninety (90) calendar days of notification, an Assessment Report (AR) for each SWMU or AOC identified under Permit Condition V.B.1. At a minimum, the AR shall provide the following information:

V.B.2.(a). The unique sequential identification for the SWMU or AOC.

V.B.2.(b). Location of unit(s) on a topographic map of appropriate scale such as required under R.61-79.270.14(b)(19).

V.B.2.(c). Designation of type and function of unit(s).

V.B.2.(d). General dimensions, capacities and structural description of unit(s) (supply any available plans/drawings).

V.B.2.(e). Dates that the unit(s) was(were) operated.

V.B.2.(f). Specification of all wastes that have been managed at/in the unit(s) to the extent available. Include any available data on R.61-79.261 Appendix VIII constituents contained in the wastes.

V.B.2.(g). All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s) (to include groundwater, soil, air, surface water, and/or sediment data).

V.B.3. Department Determination

The Department or the Permittee shall determine the need for further investigations at the SWMUs or AOCs covered in the AR. If the Department determines that such investigations

are needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Permit Conditions V.D and/or V.E. If the Department determines that further investigation of a SWMU or AOC is required, the Permit will be modified in accordance with R.61-79.270 Subpart D.

**V.C. NOTIFICATION REQUIREMENTS FOR NEWLY DISCOVERED RELEASES AT PREVIOUSLY IDENTIFIED SWMUs or AOCs**

**V.C.1. Notification**

The Permittee shall notify the Department in writing of any newly discovered release(s) of hazardous waste or hazardous constituents at previously identified SWMUs or AOCs during the course of groundwater monitoring, field investigations, environmental audits, or other means, within fifteen (15) calendar days of discovery. Such newly discovered releases may be from SWMUs or AOCs identified in Permit Condition V.A.1 or SWMUs or AOCs identified in Permit Condition V.A.2. The notification shall include all available information pertaining to the nature of the release (e.g. media affected, hazardous constituents released, magnitude of release, etc.).

**V.C.2. Plan for Investigation**

If the Department or the Permittee determines that further investigation of the SWMUs or AOCs is needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Permit Condition V.D or V.E.

**V.D. CONFIRMATORY SAMPLING (CS)**

**V.D.1. CS Workplan**

The Permittee shall prepare and submit a Confirmatory Sampling (CS) Workplan to the Department within forty five (45) calendar days of the effective date of this Permit or notification by the Department. The CS Workplan must determine any releases from SWMUs or AOCs identified in Permit Conditions V.A.1. and V.A.2. and Appendix A-4 or as required by Permit Condition V.B.3. or V.C.2. The CS Workplan shall include schedules of implementation and completion of specific actions necessary to determine whether a release has occurred.

**V.D.2. Approval Required**

The CS Workplan must be approved by the Department, in writing, prior to implementation. The Department shall specify the start date of the CS Workplan in the letter approving the CS Workplan or within sixty (60) days if a time frame is not provided. If the Department disapproves the CS Workplan, the Department shall: (1) notify the Permittee in writing of the CS Workplan's deficiencies and specify a due date for submission of a revised CS Workplan; (2) revise the CS Workplan and notify the Permittee of the revisions, or; (3) conditionally approve the CS Workplan and notify the Permittee of the conditions.

**V.D.3. Implementation**

The Permittee shall implement the confirmatory sampling in accordance with the approved CS Workplan.

**V.D.4. CS Report**

The Permittee shall prepare and submit to the Department in accordance with the schedule in the approved CS Workplan, a Confirmatory Sampling (CS) Report for SWMUs or AOCs listed

in Permit Conditions V.A.1 and V.A.2. and Appendix A-3, or as required by Permit Condition V.B.3 or V.C, that have released hazardous waste or hazardous constituents into the environment. The CS Report shall include all data, including raw data, and an analysis and summary of the data that supports the above determination.

**V.D.5. Department Determination**

Based on the results of the CS Report, the Department shall determine the need for further investigations at the SWMUs or AOCs covered in the CS Report. If the Department determines that such investigations are needed, the Permittee shall be required to prepare a plan for such investigations as outlined in Permit Condition V.E. The Department shall notify the Permittee of any no further action decision.

**V.E. RCRA FACILITY INVESTIGATION (RFI)**

**V.E.1. RFI Workplan**

The Permittee shall prepare and submit to the Department within ninety (90) days of the effective date of this Permit a RCRA Facility Investigation (RFI) Workplan(s) for those units identified in Permit Condition V.A. This Workplan shall be developed to meet the requirements of Permit Condition V.E.

**V.E.2. RFI Workplan for Newly Identified SWMUs and AOCs**

The Permittee shall prepare and submit to the Department within ninety (90) calendar days of notification by the Department, a RFI Workplan for those units identified under Permit Conditions V.B.3, V.C.2 or V.D.5. The RFI Workplan(s) shall be developed to meet the requirements of Permit Condition V.E.3.

**V.E.3. Required Contents**

The RFI Workplan(s) shall meet the requirements of Appendix B – RCRA Facility Investigation (RFI) Workplan Outline. The Permittee shall provide sufficient written justification for any omissions or deviations from any requirements of Appendix B. Such omissions or deviations are subject to the approval of the Department.

The RFI Workplan(s) shall include schedules of implementation and completion of specific actions necessary to determine the nature and extent of releases and the potential pathways of contaminant releases to air, land, surface water, and groundwater. The Permittee must provide sufficient justification and/or documentation that a release is not probable if a unit or a media/pathway associated with a unit (groundwater, surface water, sediment, soil, air or subsurface gas) is not included in the RFI Workplan(s). Such deletions of a unit, media or pathway from the RFI(s) are subject to the approval of the Department. In addition, the scope of the RFI Workplan(s) shall include all investigations necessary to ensure compliance with R.61-79.264.101(c).

**V.E.4. Department Approval**

The RFI Workplan(s) must be approved by the Department, in writing, prior to implementation. The Department shall specify the start date of the RFI Workplan schedule in the letter approving the RFI Workplan(s). If the Department disapproves the RFI Workplan(s), the Department shall: (1) notify the Permittee in writing of the RFI Workplan's deficiencies and specify a due date for submission of a revised RFI Workplan; (2) revise the RFI Workplan and notify the Permittee of the revisions and the start date of the schedule within the approved RFI Workplan, or; (3) conditionally approve the RFI Workplan and notify the Permittee of the

conditions.

V.E.5. RFI Implementation

The Permittee shall implement the RFI(s) in accordance with the approved RFI Workplan(s). The Permittee shall notify the Department at least twenty (20) days prior to any sampling activity.

V.E.6. RFI Progress Reports

If the time required to conduct the RFI(s) is greater than one hundred eighty (180) calendar days, the Permittee shall provide the Department with quarterly RFI Progress Reports (90 day intervals) beginning ninety (90) calendar days from the start date specified by the Department in the RFI Workplan approval letter. The Progress Reports shall contain the following information at a minimum:

- V.E.6.(a). A description of the portion of the RFI completed;
- V.E.6.(b). Summaries of findings;
- V.E.6.(c). Summaries of any deviations from the approved RFI Workplan during the reporting period;
- V.E.6.(d). Summaries of any significant contacts with local community public interest groups or State government;
- V.E.6.(e). Summaries of any problems encountered during the reporting period;
- V.E.6.(f). Actions taken to rectify problems;
- V.E.6.(g). Changes in relevant personnel;
- V.E.6.(h). Projected work for the next reporting period.

V.E.7. RFI Report

The Permittee shall prepare and submit to the Department a RCRA Facility Investigation Report(s) for the investigations conducted pursuant to the RFI Workplan(s) submitted under Permit Condition V.E.1 or Permit Condition V.E.2. The RFI Report(s) shall be submitted to the Department for review in accordance with the schedule in the approved RFI Workplan(s). Any revised RFI Report(s) shall be submitted to the Department within thirty (30) calendar days of receipt of the Department's comments. The RFI Report(s) shall include an analysis and summary of all required investigations of SWMUs and AOCs and their results. The summary shall describe the type and extent of contamination at the facility, including sources and migration pathways, identify all hazardous constituents present in all media, and describe actual or potential receptors. The RFI Report(s) shall also describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative of the area. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support a Corrective Measures Study (CMS), if necessary.

The RFI Report(s) shall propose a groundwater monitoring and reporting schedule for those SWMUs and/or AOCs at which groundwater contamination has been detected. Routine monitoring will be continued at these units until a remedy selection decision is made by the Department.

V.E.8. Department Notification

The Department will review the RFI Report(s) and shall notify the Permittee of the need for further investigation, if necessary; and if appropriate, the need for a CMS to meet the requirements of Permit Condition V.G. and R.61-79.264.101.

**V.F. INTERIM MEASURES (IM)**

V.F.1. IM Workplan

- V.F.1.(a). Upon notification by the Department, the Permittee shall prepare and submit an Interim Measures (IM) Workplan for any SWMU or AOC that poses a current or potential threat to human health or the environment. The Permittee may submit an IM Workplan for approval prior to notification by the Department. The IM Workplan shall be submitted within thirty (30) calendar days of notification by the Department and shall include the elements listed in Permit Condition V.F.1.(b). Interim measures may be conducted concurrently with investigation required under the terms of this Permit. The Permittee shall comply with the reporting requirements of Permit Condition V.F.3.
- V.F.1.(b). The IM Workplan shall ensure that the interim measures are designed to mitigate any current or potential threat(s) to human health or the environment and is consistent with and integrated into any long-term solution at the facility. The IM Workplan shall include: the interim measures objectives, procedures for implementation (including any designs, plans, or specifications), and schedules for implementation.
- V.F.1.(c). The IM Workplan must be approved by the Department, in writing, prior to implementation. The Department shall specify the start date of the IM Workplan schedule in the letter approving the IM Workplan. If the Department disapproves the IM Workplan, the Department shall: (1) notify the Permittee in writing of the IM Workplan's deficiencies and specify a due date for submission of a revised IM Workplan; (2) revise the IM Workplan and notify the permittee of the revisions and the start date of the schedule within the approved IM Workplan, or; (3) conditionally approve the IM Workplan and notify the Permittee of the conditions.

V.F.2. IM Implementation

- V.F.2.(a). The Permittee shall implement interim measures in accordance with the approved IM Workplan.
- V.F.2.(b). The Permittee shall give notice to the Department prior to any changes, reductions or additions to the IM Workplan.
- V.F.2.(c). Final approval of corrective action required under R.61-79.264.101 which is achieved through interim measures shall be in accordance with R.61-79.270.41 and Permit Condition V.H. as a permit modification.

V.F.3. IM Reports

- V.F.3.(a). If the time required for completion of interim measures is greater than one year, the Permittee shall provide the Department with progress reports at intervals specified in the approved workplan. The Progress Reports shall contain the following information at a minimum:
- V.F.3.(a)(i) A description of the portion of the interim measures completed;

- V.F.3.(a)(ii) Summaries of findings;
- V.F.3.(a)(iii) Summaries of any deviations from the IM Workplan during the reporting period;
- V.F.3.(a)(iv) Summaries of any problems encountered during the reporting period; and
- V.F.3.(a)(v) Projected work for the next reporting period.
- V.F.3.(b). The Permittee shall prepare and submit to the Department, within ninety (90) calendar days of completion of interim measures conducted under Permit Condition V.F an Interim Measures (IM) Report. The IM Report shall contain the following information at a minimum:
  - V.F.3.(b)(i) A description of interim measures implemented;
  - V.F.3.(b)(ii) Summaries of results;
  - V.F.3.(b)(iii) Summaries of all problems encountered;
  - V.F.3.(b)(iv) Summaries of accomplishments and/or effectiveness of interim measures; and
  - V.F.3.(b)(v) Copies of all relevant laboratory/monitoring data, etc. in accordance with Permit Condition I.E.9.

#### **V.G. CORRECTIVE MEASURES STUDY**

##### **V.G.1. Corrective Measures Study (CMS) Workplan**

- V.G.1.(a). The Permittee shall prepare and submit a CMS Workplan for those units requiring a CMS within ninety (90) calendar days of notification by the Department that a CMS is required. This CMS Workplan shall be developed to meet the requirements of Permit Condition V.G.1.(b). The CMS may be performed concurrent with the RFI if the Department determines that sufficient investigative details are available to allow concurrent action.
- V.G.1.(b). The CMS Workplan shall meet the requirements of Appendix C – Corrective Measure Study (CMS) Outline, at a minimum. The CMS Workplan shall include schedules of implementation and completion of specific actions necessary to complete a CMS. The Permittee must provide sufficient written justification and documentation for any unit deleted from the CMS Workplan. Such deletion of a unit is subject to the approval of the Department. The CMS shall be conducted in accordance with the approved CMS Workplan. The Permittee shall provide sufficient written justification for any omissions or deviations from the minimum requirements of Appendix C. Such omissions or deviations are subject to the approval of the Department. The scope of the CMS Workplan shall include all investigations necessary to ensure compliance with R.61-79.264.101, 264.552, 264.553 and 270.32(b)(2). The Permittee shall implement corrective actions beyond the facility boundary, as set forth in Permit Condition V.A.3.
- V.G.1.(c). If the Department disapproves the CMS Workplan, the Department shall; (1) notify the Permittee in writing of the CMS Workplan's deficiencies and specify a due date for submittal of a revised CMS Workplan; (2) revise the CMS Workplan and notify

the Permittee of the revisions, or; (3) conditionally approve the CMS Workplan and notify the Permittee of the conditions.

V.G.2. Corrective Measures Study Implementation

The Permittee shall implement the Corrective Measures Study according to the schedules specified in the CMS Workplan, or no later than fifteen (15) calendar days after the Permittee has received written approval from the Department for the CMS Workplan. The CMS shall be conducted in accordance with the approved CMS Workplan.

V.G.3. CMS Report

V.G.3.(a). The Permittee shall prepare and submit to the Department a CMS Report for the study conducted pursuant to the approved CMS Workplan. The CMS Report shall be submitted to the Department in accordance with the schedule in the approved CMS Workplan. Any revised CMS Report(s) shall be submitted to the Department within thirty (30) days of receipt of the Department's comments. The CMS Report shall summarize any bench-scale or pilot tests conducted. The CMS Report must include an evaluation of each remedial alternative. The CMS Report shall present all information gathered under the approved CMS Workplan. The CMS Report must contain adequate information to support the Department's decision on the recommended remedy, described under Permit Condition V.H.

V.G.3.(b). If the Department determines that the CMS Report does not fully satisfy the information requirements specified under Permit Condition V.G.3.(a), the Department may disapprove the CMS Report. If the Department disapproves the CMS Report, the Department shall notify the Permittee in writing of the deficiencies in the CMS Report and specify a due date for submittal of a revised CMS Report. The Department will notify the Permittee of any no further action decision.

V.G.3.(c). As specified under Permit Condition V.G.3.(b) based on preliminary results and the CMS Report, the Department may require the Permittee to evaluate additional remedies or particular elements of one or more proposed remedies.

**V.H. REMEDY APPROVAL AND PERMIT MODIFICATION**

V.H.1. Remedy Selection

The Department shall select a remedy from the remedial alternatives evaluated in the CMS. The selection will be based at a minimum on protection of human health and the environment, as per specific site conditions, existing regulations, and guidance. The selected remedy may include any interim measures implemented to date.

V.H.2. Statement of Basis

Upon approval of the CMS Report or other Department decision [*i.e. NFA*], the Permittee shall prepare a draft Statement of Basis that provides a summary and justification of the selected remedy. The Statement of Basis should be written following EPA guidance "Guidance on RCRA Corrective Action Decision Documents: The Statement of Basis, Final Decision and Response to Comments," February 1991, EPA/540/G-91/011, (or most recent version) or other Department approved guidance, and should include information on the proposed remedy, facility background, exposure pathways, cleanup goals, the scope of the corrective action, the remedial alternatives considered, an evaluation of those alternatives, and public participation. The Statement of Basis shall be submitted to the Department in draft form within the time frame specified in the letter from the Department that notifies the Permittee that the CMS

Report is approved or within thirty (30) days if a time frame is not provided. The Department shall notify the Permittee of deficiencies and specify a due date for submittal of a revised Statement of Basis or revise and finalize the Statement of Basis.

**V.H.3. Permit Modification**

Pursuant to R.61-79.270.41, a permit modification will be initiated by the Department after recommendation of a remedy under Permit Condition V.H.1. This modification will serve to incorporate a final remedy into this Permit.

**V.H.4. Financial Assurance**

Within one hundred and twenty (120) calendar days after this Permit has been modified for remedy selection, the Permittee shall demonstrate financial assurance for completing the approved remedy. The mechanism for financial assurance shall be one that is allowable under R.61-79.264 Subpart H.

**V.I. CORRECTIVE MEASURES IMPLEMENTATION (CMI)**

**V.I.1. CMI Workplan**

Within thirty (30) days of the effective date of the Permit modification for the remedy selection, unless otherwise agreed by the Department, the Permittee shall prepare and submit a Corrective Measures Implementation (CMI) Workplan for the SWMUs or AOCs listed in Appendix A-7 – SWMUs and AOCs in Corrective Action. At a minimum, this workplan shall include the following:

- V.I.1.(a). A description of the conceptual design, technical features (e.g. Plans and Specifications) and a Construction Plan for the selected remedy(ies) to achieve media cleanup standards protective of human health and the environment, controlling the source(s) of release, and complying with standards for the management of wastes and any remedial residues.
- V.I.1.(b). A proposed schedule that takes into account all phases of the CMI. The schedule should also include the submittal of documents to support the CMI (e.g. Operation and Maintenance Plan, Construction Completion Report, etc.) as described in Permit Conditions V.I.2. and V.I.4.
- V.I.1.(c). Requirements for removal and decontamination of units, equipment, devices or structures that will be used to implement the remedy(ies).

**V.I.2. Operation and Maintenance Plan**

An Operation and Maintenance Plan (O&MP) shall be submitted to the Department in accordance with the schedule required by Permit Condition V.I.1.(b). The O&MP, at a minimum, shall include the following:

- V.I.2.(a). A system description, startup procedures, operation and maintenance procedures and schedule of inspection and maintenance;
- V.I.2.(b). Waste management practices, sampling and analysis required for operation and contingency procedures;
- V.I.2.(c). A description of the Corrective Measure(s) completion criteria and the method to be used to show when the criteria are met; and

**V.I.2.(d). For remedies with Land Use**

Controls, the Operation and



Maintenance Plan should include the requirements of Permit Condition V.I.5.

V.I.3. Department Approval

All Plans required for the CMI phase, required by Permit Condition V.I. must be approved, in writing, by the Department prior to implementation, in accordance with Permit Condition V.K.1

V.I.4. Construction Completion Report

A Construction Completion Report (CCR) shall be submitted to the Department, in accordance with the schedule required by Permit Condition V.I.1.(b), that demonstrates the completion of the remedy construction in accordance with approved plans and specifications. The CCR shall be submitted when all operational tests have been completed. Any necessary documentation required by the Department shall be included in this report.

V.I.5. Remedy with Land Use Controls

The SWMUs and AOCs for which land use controls are selected as an integral part of the final remedy are listed in Appendix A-8 - SWMUs and AOCs Requiring Land Use Controls. The Permittee will implement land use controls at the Santolubes facility in accordance with the Land Use Control Management Plan (LUCMP) provided in Attachment 7 of the approved Permit Application. When corrective measures incorporate land use controls as part of the selected remedy, the following information should be provided:

V.I.5.(a). The name, address and phone number of the person to contact about the SWMU or AOC;

V.I.5.(b). Any necessary security provisions consistent with R.61-79.264.117(b) to prevent unauthorized entry and/or use of the waste unit;

V.I.5.(c). A description of measures to protect the integrity of any installed engineering control(s) and associated features considered as part of the selected remedy, for the period that has to be maintained;

V.I.5.(d). Planned maintenance and monitoring activities, and frequencies to ensure the security provisions are maintained;

V.I.5.(e). Procedure(s) to follow when a determination is made that the land use control(s) are not effective and require modification;

V.I.5.(f). The mechanism by which a notification will be recorded on the deed for the facility property, or some other instrument which is normally examined during title search, that will in perpetuity notify any potential future purchaser of the property, that the property had been used for waste management and disposal activities and that restrictions exist precluding a residential use of the land. The need for a deed restriction may be reevaluated upon the transfer of ownership or control; and

V.I.5.(g). The mechanism by which other pertinent agencies (State or Federal) will be given notice of restrictions placed on the use of the property, that is affecting or may affect in the future, areas under the control of other State or Federal agencies.

V.I.5.(h). The above information is outlined in detail in the Land Use Control Management Plan (LUCMP) provided in Attachment 7 of the approved Permit Application.

V.I.6. CMI Progress Reports

## MODULE V - CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS & AREAS OF CONCERN

If the time frame required to complete corrective measures implementation is greater than one hundred and eighty (180) days, the Permittee shall provide the Department with semi-annual Corrective Measures Implementation Progress Reports (180 day intervals) beginning from the date the CMI Workplan is approved by the Department, until the Remedy Completion Report is approved by the Department. The time frame stated is effective unless otherwise agreed to by the Department. The CMI Progress Reports shall contain at least the following information:

- V.I.6.(a). A description of the portion of the CMI Workplan completed (e.g. sampling events, operations, volumes removed/treated, wastes generated, etc);
  - V.I.6.(b). A summary of system performance/compliance and progress toward achieving cleanup goals;
  - V.I.6.(c). A summary of any deviations from the approved CMI Workplans during the reporting period;
  - V.I.6.(d). Summaries of all contacts with local community and public interest groups or State and Federal Government;
  - V.I.6.(e). A summary of any problems or potential problems encountered during the reporting period;
  - V.I.6.(f). A summary of actions taken to rectify the problems;
  - V.I.6.(g). Any changes in relevant personnel; and
  - V.I.6.(h). Projected work for the next reporting period.
- V.I.7. Remedy Completion Report
- V.I.7.(a). Within ninety (90) days of completion of CMI phase, unless otherwise agreed by the Department, the Permittee shall submit a Remedy Completion Report (RCR), including certification of completion of the corrective measures activities. The RCR shall summarize the activities and results from the entire period of Corrective Measures Implementation. The RCR shall also demonstrate compliance with all media cleanup goals and meet the corrective measures completion criteria in accordance with Permit Condition V.I.2.(c). Approval by the Department of the final RCR constitutes remedy completion.
  - V.I.7.(b). For corrective measures involving the cleanup of groundwater, the Permittee must demonstrate that the concentrations of the constituents of concern remain at or below cleanup levels for three (3) consecutive years after the corrective measures have been terminated. The time frame stated is effective unless otherwise agreed to by the Department.

## **V.J. MODIFICATION OF THE CORRECTIVE ACTION SCHEDULE OF COMPLIANCE**

### V.J.1. Initiation

If at any time the Department determines that modification of the Corrective Action Schedule of Compliance is necessary, the Department may initiate a modification to the Schedule of Compliance, in accordance with the applicable provisions of R.61-79.270.

### V.J.2. Permittee Requested Modification

The Permittee may request a permit modification in accordance with R.61-79.270 to change the Schedule of Compliance.

**V.K. WORKPLAN AND REPORT REQUIREMENTS**

**V.K.1. Department Approval**

All workplans, reports and schedules shall be subject to approval by the Department prior to implementation to assure that such workplans, reports and schedules are consistent with the requirements of this Permit and with applicable regulations and guidance. The Permittee shall revise all submittals and schedules as specified by the Department. Upon approval, the Permittee shall implement all workplans and schedules as written.

**V.K.2. Extensions for Submittals**

All workplans and reports shall be submitted in accordance with the approved schedule. Extensions of the due date for submittals may be granted by the Department based on the Permittee's demonstration that sufficient justification for the extension exists.

**V.K.3. Amendment of the Workplan(s)**

If the Permittee at any time determines that the Assessment Report information required under Permit Condition V.B.2, the CS Workplan under Permit Condition V.D, or RFI Workplan(s) required under Permit Condition V.E, no longer satisfy the requirements of R.61-79.264.101 or this Permit for prior or continuing releases of hazardous waste or hazardous constituents from solid waste management units and/or areas of concern, the Permittee shall submit an amended Assessment Report and/or Workplan(s) to the Department within ninety (90) calendar days of such determination.

**V.L. APPROVAL/DISAPPROVAL OF SUBMITTALS**

The Department will review the workplans, reports, schedules, and other documents ("submittals") which require the Department's approval in accordance with the conditions of this Permit. The Department will notify the Permittee in writing of any submittal that is disapproved, and the basis thereof.

### Corrective Action Schedule of Compliance

Permit Condition	Event	Due Date
VII.B.1	Notification of Newly Identified SWMUs and AOCs.	Within fifteen (15) days of discovery.
VII.B.2	Assessment Report.	Within ninety (90) days of notification
VII.C.1	Notification for Newly Discovered Releases at Previously Identified SWMUs and AOCs.	Within fifteen (15) days of discovery.
VII.D.1	Confirmatory Sampling Workplan for SWMUs or AOCs Identified in Appendix A-3.	Within forty-five (45) days of the effective date of this Permit.
VII.D.2	Implementation of Confirmatory Sampling Workplan.	In accordance with the Department's approval letter for the CS Workplan.
VII.D.4	Confirmatory Sampling Report	In accordance with the approved CS Workplan.
VII.A.1	RFI Workplan for SWMU(s) and AOC(s) Identified under Permit Condition VII.A.1.	Within ninety (90) days of the effective date of this Permit.
VII.B.3, VII.C.2, or VII.D.5	RFI Workplan for SWMU(s) and AOC(s)	Within ninety (90) days after receipt of notification by the Department of which SWMUs or AOCs require an RFI.
VII.E.5	Implementation of RFI Workplan.	In accordance with the Department-approved RFI Workplan.
VII.E.5	Notification of Sampling Activities.	At least twenty (20) days prior to any RFI sampling activity.
VII.E.6	RFI Progress Reports.	Quarterly, beginning ninety (90) days from the start date specified by the Department <sup>1</sup>
VII.E.7	RFI Report.	In accordance with the approved RFI Workplan.
VII.E.7	Revised RFI Report	Within thirty (30) days of receipt of the Department's comments on the RFI Report.

MODULE V - CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS & AREAS OF CONCERN

Permit Condition	Event	Due Date
VII.F.1(a)	Interim Measures Workplan.	Within thirty (30) days of notification by the Department.
VII.F.1(c)	Implementation of IM Workplan.	In accordance with the Department-approved IM Workplan.
VII.F.3(a)	Interim Measures Progress Reports.	In accordance with the approved Interim Measures Workplan. <sup>2</sup>
VII.F.3(b)	Interim Measures Report.	Within ninety (90) days of completion.
VII.G.1(a)	CMS Workplan.	Within ninety (90) days of notification by the Department that a CMS is required.
VII.G.2	Implementation of the CMS Workplan.	Within fifteen (15) days after receipt of the Department's approval of the Workplan.
VII.G.3(a)	CMS Report.	In accordance with the schedule in the approved CMS Workplan.
VII.G.3(a)	Revised CMS Report.	Within thirty (30) days of receipt of the Department's comments on the CMS Report.
VII.H.2	Statement of Basis.	Within thirty (30) days of receipt of the Department's approval letter for the CMS Report.
VII.H.4	Demonstration of Financial Assurance.	Within one hundred twenty (120) days after Permit modification for remedy.
VII.I.1	CMI Workplan.	Within thirty (30) days of the permit modification for remedy selection.
VII.I.2	Operations and Maintenance Plan.	In accordance with the schedule in the approved CMI Workplan.
VII.I.4	Construction Completion Report.	In accordance with the schedule in the approved CMI Workplan.
VII.I.6	CMI Progress Reports.	Semi-annually, beginning one hundred eighty (180) days after approval of the CMI Workplan.

MODULE V - CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS & AREAS OF CONCERN

Permit Condition	Event	Due Date
VII.I.7	Remedy Completion Report.	Within ninety (90) days of completion of the selected remedy.
VII.K.3	Amendment of Assessment Report, CS Workplan, or RFI Workplan that no longer satisfies requirements of R.61-79.264.101 or this Permit.	Within ninety (90) days of determination.
<p>The above reports must be signed and certified in accordance with R.61-79.270.11.</p> <p><sup>1</sup> Applies to workplan execution that requires more than one hundred eighty (180) days.</p> <p><sup>2</sup> Applies to workplan execution that requires more than one (1) year.</p>		

## **MODULE VI - WASTE MINIMIZATION**

### **Module VI.**

#### **VI.A. GENERAL RESTRICTIONS**

In the event that the Permittee treats, stores, or disposes of hazardous wastes onsite where such wastes were generated, then the Permittee must comply with R.61-79.264.73(b)(9), and Section 3005 (h) of RCRA (42 U.S.C. 6925(h)), and the Permittee must certify, no less than annually, that:

##### **VI.A.1. Reduction of Hazardous Waste**

The Permittee has a program in place to reduce the volume and toxicity of hazardous waste generated to the degree determined by the Permittee to be economically practicable; and

##### **VI.A.2. Method of Treatment, Storage or Disposal**

The proposed method of treatment, storage or disposal is the most practicable method available to the Permittee that minimizes the present and future threat to human health and the environment.

#### **VI.B. RECORDING REQUIREMENTS**

If Permit Condition VIII.A is applicable, then the Permittee shall maintain copies of this certification in the facility operating record as required by R.61-79.264.73(b)(9).

#### **VI.C. WASTE MINIMIZATION OBJECTIVES**

If Permit Condition VIII.A is applicable, the Waste Minimization program required under Permit Condition VIII.A should address the objectives listed on the following two pages (Waste Minimization Objectives).

The Waste Minimization Program should include the following elements:

I. Top Management Support

- A. Dated and signed policy describing management support for waste minimization and for implementation of a waste minimization plan.
- B. Description of employee awareness and training programs designed to involve employees in waste minimization planning and implementation to the maximum extent feasible.
- C. Description of how a waste minimization plan has been incorporated into management practices so as to ensure ongoing efforts with respect to product design, capital planning, production operations, and maintenance.

II. Characterization of Waste Generation

- A. Identification of types, amounts, and hazardous constituents of waste streams, with the source and date of generation.

III. Periodic Waste Minimization Assessments

- A. Identification of all points in a process where materials can be prevented from becoming a waste, or can be recycled.
- B. Identification of potential waste reduction and recycling techniques applicable to each waste, with a cost estimate for capital investment and implementation.
- C. Description of technically and economically practical waste reduction/recycling options to be implemented, and a planned schedule for implementation.
- D. Specific performance goals, preferably quantitative, for the source reduction of waste by stream. Whenever possible, goals should be stated as weight of waste generated per standard unit of production, as defined by the generator.

IV. Cost Allocation System

- A. Identification of waste management costs for each waste, factoring in liability, transportation, recordkeeping, personnel, pollution control, treatment, disposal, compliance and oversight costs to the extent feasible.
- B. Description of how departments are held accountable for the wastes they generate.
- C. Comparison of waste management costs with costs of potential reduction and recycling techniques applicable to each waste.

V. Technology Transfer

- A. Description of efforts to seek and exchange technical information on waste minimization from other



parts of the company, other firms, trade associations, technical assistance programs, and professional consultants.

#### VI. Program Evaluation

- A. Description of types and amounts of hazardous waste reduced or recycled.
- B. Analysis and quantification of progress made relative to each performance goal established and each reduction technique to be implemented.
- C. Amendments to waste minimization plan and explanation.
- D. Explanation and documentation of reduction efforts completed or in progress before development of the waste minimization plan.
- E. Explanation and documentation regarding impediments to hazardous waste reduction specific to the individual facility.

#### References:

"Draft Guidance to Hazardous Waste Generators on the Elements of a Waste Minimization Program", 54 FR 25056, June 12, 1989.

"Waste Minimization Opportunity Assessment Manual", EPA/625/7-88/003, July 1988.

## **MODULE VII - LAND DISPOSAL RESTRICTIONS**

Module VII.

### **VII.A. GENERAL RESTRICTIONS**

R.61-79.268 identifies hazardous wastes that are restricted from land disposal and defines those limited circumstances under which an otherwise prohibited waste may continue to be placed on or in a land treatment, storage, or disposal unit. The Permittee shall maintain compliance with the requirements of R.61-79.268. Where the Permittee has applied for an extension, waiver or variance under R.61-79.268, the Permittee shall comply with all restrictions on land disposal under this Part once the effective date for the waste has been reached pending a final decision for such application.

### **VII.B. LAND DISPOSAL PROHIBITIONS AND TREATMENT STANDARDS**

#### **VII.B.1. Restricted Waste Disposal Prohibition**

A restricted waste identified in R.61-79.268 Subpart C may not be placed in a land disposal unit without further treatment unless the requirements of R.61-79.268 Subparts C and/or D are met.

#### **VII.B.2. Storage Prohibition**

The storage of hazardous wastes restricted from land disposal under R.61-79.268 is prohibited unless the requirements of R.61-79.268 Subpart E are met.

# APPENDIX A - SOLID WASTE MANAGEMENT UNIT AND AREA OF CONCERN SUMMARY

Appendix A-1	
List of All Solid Waste Management Units (SWMUs), Areas of Concern (AOCs) and Regulated Units	
SWMU/AOC No/Letter	SWMU/AOC Name
SWMU 1	Inactive Surface Impoundment
SWMU 2	Inactive Surface Impoundment
SWMU 3	Inactive Surface Impoundment
SWMU 4	Inactive Surface Impoundment
SWMU 5	Inactive Surface Impoundment
SWMU 6	Inactive Surface Impoundment
SWMU 7	Inactive Surface Impoundment
SWMU 8	Inactive Surface Impoundment
SWMU 9	Overflow Basin
SWMU 10	Inactive Surface Impoundment
SWMU 11	Inactive Surface Impoundment
SWMU 12	Inactive Surface Impoundment
SWMU 13	Inactive Surface Impoundment
SWMU 14	Stormwater Retention Pond
SWMU 15	pH Neutralization Basin
SWMU 16	Primary Clarifier

APPENDIX A - SOLID WASTE MANAGEMENT UNIT AND AREA OF CONCERN SUMMARY

SWMU 17	Former Surface Impoundment (Aeration Basin)
SWMU 18	Secondary Basin
SWMU 19	Sludge Thickener
SWMU 20	Vacuum Filter
SWMU 21	Sludge Disposal Container
SWMU 22	Methanol Waste Storage Tank
SWMU 23	Equipment Disposal Area
SWMU 24	Process Sewer System
SWMU 25	Empty Drum Storage Area
SWMU 26	Empty Drum Storage Area
AOC a	Drainage Ditch
AOC b	Drain Pipe Discharge Point
AOC e	Drainage Ditch
AOC Bldg. 8	Soil Contamination below Building 8

Appendix A-2	
Units Regulated Under R.61-79.264 (RCRA-regulated units)	
SWMU/AOC	SWMU/AOC Name
SWMU 17	Former Surface Impoundment (Aeration Basin)

APPENDIX A - SOLID WASTE MANAGEMENT UNIT AND AREA OF CONCERN SUMMARY

Appendix A-3

SWMUs and AOCs Requiring No Further Action at this Time

SWMU/AOC No/Letter	SWMU/AOC Name
SWMU 11	Inactive Surface Impoundment
SWMU 12	Inactive Surface Impoundment
SWMU 15	pH Neutralization Basin
SWMU 16	Primary Clarifier
SWMU 18	Secondary Basin
SWMU 19	Sludge Thickener
SWMU 20	Vacuum Filter
SWMU 21	Sludge Disposal Container
SWMU 22	Methanol Waste Storage Tank
SWMU 23	Equipment Disposal Area
AOC a	Drainage Ditch
AOC b	Drain Pipe Discharge Point
AOC d	Sewer Manholes
AOC e	Drainage Ditch

Appendix A-4

SWMUs and AOCs Requiring Confirmatory Sampling

SWMU/AOC	SWMU/AOC Name

APPENDIX A - SOLID WASTE MANAGEMENT UNIT AND AREA OF CONCERN SUMMARY

Appendix A-5	
SWMUs and AOCs Requiring a RCRA Facility Investigation (RFI)	
SWMU/AOC	SWMU/AOC Name

Appendix A-6	
SWMUs and AOCs Requiring a Corrective Measures Study	
SWMU/AOC	SWMU/AOC Name

Appendix A-7	
SWMUs and AOCs in Corrective Action	
SWMU/AOC No/Letter	SWMU/AOC Name

APPENDIX A - SOLID WASTE MANAGEMENT UNIT AND AREA OF CONCERN SUMMARY

Appendix A-8

SWMUs and AOCs Requiring Land Use Controls

SWMU/AOC Number	SWMU/AOC Name	Description of Corrective Action	Description of LUC	Corrective Action Document Selecting LUC
SWMU 1	Inactive Surface Impoundment	Cap In Place Land Use Controls Site-Wide GW Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	CAMU Permit Modification Request, revised 5/01, and modified 6/5/03
SWMU 2	Inactive Surface Impoundment	Incorporation into Cell 1 of CAMU Land Use Controls Site-Wide GW Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	CAMU Permit Modification Request, revised 5/01; Construction Quality Assurance Report , CAMU Celll 1, dated June 2003
SWMU 3	Inactive Surface Impoundment	Incorporation into Cell 1 of CAMU Land Use Controls Site-Wide GW Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	CAMU Permit Modification Request, revised 5/01; Construction Quality Assurance Report , CAMU Celll 1, dated June 2003
SWMU 4	Inactive Surface Impoundment	Incorporation into Cell 1 of CAMU Land Use Controls Site-Wide GW Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	CAMU Permit Modification Request revised 5/01; Construction Quality Assurance Report, CAMU Cell 1, dated June 2003

APPENDIX A - SOLID WASTE MANAGEMENT UNIT AND AREA OF CONCERN SUMMARY

SWMU 5	Inactive Surface Impoundment	Cap In Place Land Use Controls Site Wide Groundwater Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	CAMU Permit Modification Request revised 5/01; Construction Quality Assurance Report, CAMU Cell 1, dated June 2003
SWMU 6	Inactive Surface Impoundment	Incorporation into Cell 1 of CAMU Land Use Controls Site-Wide GW Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	CAMU Permit Modification Request revised 5/01; Construction Quality Assurance Report, CAMU Cell 1, dated June 2003
SWMU 7	Inactive Surface Impoundment	Incorporation into Cell 1 of CAMU Land Use Controls Site-Wide GW Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	CAMU Permit Modification Request revised 5/01; Construction Quality Assurance Report, CAMU Cell 1, dated June 2003
SWMU 8	Inactive Surface Impoundment	Incorporation into Cell 1 of CAMU Land Use Controls Site-Wide GW Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	CAMU Permit Modification Request revised 5/01; Construction Quality Assurance Report, CAMU Cell 1, dated June 2003



APPENDIX A - SOLID WASTE MANAGEMENT UNIT AND AREA OF CONCERN SUMMARY

SWMU 10	Inactive Surface Impoundment	Incorporation into Cell 2 of CAMU Land Use Controls Site-Wide GW Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	CAMU Permit Modification Request revised 5/01; Construction Quality Assurance Report, CAMU Cell 1, dated June 2003
SWMU 17	Former Surface Impoundment (Aeration Basin)	Certified Closure Land Use Controls Site Wide GW Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	Postclosure Care Plan in approved Permit Application
SWMU 26	Empty Drum Storage Area	Cap In Place Land Use Controls Site-Wide GW Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	CMS Report, revised 1/01
Building 8 AOC	Soil Contamination below Building 6	Cap In Place Land Use Controls Site-Wide GW Monitoring	Deed and Access Restrictions, Groundwater Use Restrictions	CMS Report, revised 1/01

Appendix A-9	
SWMUs and AOCs Transferred to Another Environmental Program	
SWMU/AOC	SWMU/AOC Name

## **APPENDIX B - RCRA FACILITY INVESTIGATION (RFI) WORKPLAN OUTLINE**

### **VII. RFI WORKPLAN REQUIREMENTS**

The Permittee shall prepare a RCRA Facility Investigation (RFI) Workplan that meets the requirements of Part II of this appendix and the RFI Guidance, EPA-530/SW-89-031. This workplan shall also include the development of the following plans, which shall be prepared concurrently:

#### **A. Project Management Plan**

Permittee shall prepare a Project Management Plan that will include a discussion of the technical approach, schedules and personnel. The Project Management Plan will also include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RCRA Facility Investigation.

#### **B. Sampling and Analysis Plan(s)**

The Permittee shall prepare a plan to document all monitoring procedures: field sampling, sampling procedures and sample analysis performed during the investigation to characterize the environmental setting, source, and releases of hazardous constituents, so as to ensure that all information and data are valid and properly documented. The Sampling Strategy and Procedures shall be in accordance with EPA Region 4 Environmental Compliance Branch's Standard Operating Procedure and Quality Assurance Manual (SOP) (most recent version). Any deviations from this reference must be requested by the applicant and approved by the Department. The Sampling and Analysis Plan must specifically discuss the following unless the SOP procedures are specifically referenced.

##### **1. Sampling Strategy**

- (a) Selecting appropriate sampling locations, depths, etc.;
- (b) Obtaining all necessary ancillary data;
- (c) Determining conditions under which sampling should be conducted;
- (d) Determining which media are to be sampled (e.g., groundwater, air, soil, sediment, subsurface gas);
- (e) Determining which parameters are to be measured and where;
- (f) Selecting the frequency of sampling and length of sampling period;
- (g) Selecting the types of samples (e.g., composites vs. grabs) and number of samples to be collected.

##### **2. Sampling Procedures**

- (a) Documenting field sampling operations and procedures, including;
  - (i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, preservatives, and absorbing reagents);
  - (ii) Procedures and forms for recording the exact location and specific considerations associated

- with sample acquisition;
- (iii) Documentation of specific sample preservation method;
- (iv) Calibration of field instruments;
- (v) Submission of field-biased blanks, where appropriate;
- (vi) Potential interferences present at the facility;
- (vii) Construction materials and techniques, associated with monitoring wells and piezometers;
- (viii) Field equipment listing and sampling containers;
- (ix) Sampling order; and
- (x) Decontamination procedures.
- (b) Selecting appropriate sample containers;
- (c) Sampling preservation; and
- (d) Chain-of-custody, including:
  - (i) Standardized field tracking reporting forms to establish sample custody in the field prior to shipment; and
  - (ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.

### 3. Sample Analysis

Sample analysis shall be conducted in accordance with Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) (most recent version). The sample analysis section of the Sampling and Analysis Plan shall specify the following:

- (a) Chain-of-custody procedures, including:
  - (i) Identification of a responsible party to act as sampling custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;
  - (ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab tracking report sheets; and
  - (iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersment for analysis.
- (b) Sample storage;
- (c) Sample preparation methods;

- (d) Analytical Procedures, including:
  - (i) Scope and application of the procedure;
  - (ii) Sample matrix;
  - (iii) Potential interferences;
  - (iv) Precision and accuracy of the methodology; and
  - (v) Method detection limits.
- (e) Calibration procedures and frequency;
- (f) Data reduction, validation and reporting;
- (g) Internal quality control checks, laboratory performance and systems audits and frequency, including:
  - (i) Method blank(s);
  - (ii) Laboratory control sample(s);
  - (iii) Calibration check sample(s);
  - (iv) Replicate sample(s);
  - (v) Matrix-spiked sample(s);
  - (vi) "Blind" quality control sample(s);
  - (vii) Control charts;
  - (viii) Surrogate samples;
  - (ix) Zero and span gases; and
  - (x) Reagent quality control checks.
- (h) External quality control checks by the Department, including:
  - (i) Spikes and blanks at sampling events for which the Department or its technical representative provides oversight; and
  - (ii) The equivalent of a CLP data package for samples split with the Department or for which the Department specifically requests the package.
- (i) Preventive maintenance procedures and schedules;
- (j) Corrective action (for laboratory problems); and
- (k) Turnaround time.

### C. Data Management Plan

The Permittee shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record - The data record shall include the following:
  - (i) Unique sample or field measurement code;
  - (ii) Sampling or field measurement location and sample or measurement type;
  - (iii) Sampling or field measurement raw data;
  - (iv) Laboratory analysis ID number;
  - (v) Property or component measures; and
  - (vi) Result of analysis (e.g. concentration).
2. Tabular Displays - The following data shall be presented in tabular displays:
  - (a) Unsorted (raw) data;
  - (b) Results for each medium, or for each constituent monitored;
  - (c) Data reduction for statistical analysis, as appropriate;
  - (d) Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
  - (e) Summary data
3. Graphical Displays - The following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transits, three dimensional graphs, etc.):
  - (a) Display sampling location and sampling grid;
  - (b) Indicate boundaries of sampling area, and area where more data are required;
  - (c) Display geographical extent of contamination;
  - (d) Illustrate changes in concentration in relation to distances from the source, time, depth or other parameters; and
  - (e) Indicate features affecting inter media transport and show potential receptors.

### VIII. RCRA Facility Investigation (RFI) Requirements

#### RCRA Facility Investigation:

The Permittee shall conduct those investigations necessary to: characterize the facility (Environmental Setting); define the source (Source Characterization); define the degree and extent of release of hazardous

constituents (Contamination Characterization); and identify actual or potential receptors.

The investigations should result in data of adequate technical content and quality to support the development and evaluation of the corrective action plan if necessary. The information contained in previously developed documents such as a RCRA Part B permit application and/or RCRA Section 3019 Exposure Information Report may be referenced as appropriate, but must be summarized in both the RFI Workplan and RFI Report.

All sampling and analyses shall be conducted in accordance with the Sampling and Analysis Plan. All sampling locations shall be documented in a log and identified on a detailed site map.

#### A. Environmental Setting

The Permittee shall collect information to supplement and/or verify Part B information on the environmental setting at the facility. The Permittee shall characterize the following as they relate to identified sources, pathways and areas of releases of hazardous constituents from Solid Waste Management Units.

##### 1. Hydrogeology

The Permittee shall conduct a program to evaluate hydrogeologic conditions at the facility. This program shall provide the following information:

- (a) A description of the regional and facility specific geologic and hydrogeologic characteristics affecting ground-water flow beneath the facility, including:
  - (i) Regional and facility specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts;
  - (ii) Structural geology: description of local and regional structural features (e. g., folding, faulting, tilting, jointing, etc.);
  - (iii) Depositional history;
  - (iv) Regional and facility specific ground-water flow patterns; and
  - (v) Identification and characterization of areas and amounts of recharge and discharge.
- (b) An analysis of any topographic features that might influence the ground-water flow system.
- (c) Based on field data, tests, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the facility (i. e., the aquifers and any intervening saturated and unsaturated units), including:
  - (i) Hydraulic conductivity and porosity (total and effective);
  - (ii) Lithology, grain size, sorting, degree of cementation;
  - (iii) An interpretation of hydraulic interconnections between saturated zones; and
  - (iv) The attenuation capacity and mechanisms of the natural earth materials (e. g., ion exchange capacity, organic carbon content, mineral content etc.).
- (d) Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative

description of water level or fluid pressure monitoring including:

- (i) Water-level contour and/or potentiometric maps;
  - (ii) Hydrologic cross sections showing vertical gradients;
  - (iii) The flow system, including the vertical and horizontal components of flow; and
  - (iv) Any temporal changes in hydraulic gradients, for example, due to tidal or seasonal influences.
- (e) A description of man-made influences that may affect the hydrology of the site, identifying:
- (i) Local water-supply and production wells with an approximate schedule of pumping; and
  - (ii) Man-made hydraulic structures (pipelines, french drains, ditches, etc.).

## 2. Soils

The Permittee shall conduct a program to characterize the soil and rock units above the water table in the vicinity of contaminant release(s). Such characterization may include, but not be limited to, the following types of information as appropriate:

- (a) Surface soil distribution;
- (b) Soil profile, including ASTM classification of soils;
- (c) Transects of soil stratigraphy;
- (d) Hydraulic conductivity (saturated and unsaturated);
- (e) Relative permeability;
- (f) Bulk density;
- (g) Porosity;
- (h) Soil sorption capacity;
- (i) Cation exchange capacity (CEC);
- (j) Soil organic content;
- (k) Soil pH;
- (l) Particle size distribution;
- (m) Depth of water table;
- (n) Moisture content;
- (o) Effect of stratification on unsaturated flow;
- (p) Infiltration;

- (q) Evapotranspiration;
- (r) Storage capacity;
- (s) Vertical flow rate; and
- (t) Mineral content.

### 3. Surface Water and Sediment

The Permittee shall conduct a program to characterize the surface water bodies in the vicinity of the facility. Such characterization may include, but not be limited to, the following activities and information:

- (a) Description of the temporal and permanent surface water bodies including:
  - (i) For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;
  - (ii) For impoundments: location, elevation, surface area, depth, volume, freeboard, and construction and purpose;
  - (iii) For streams, ditches, and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, flooding tendencies (i. e., 100 year event), discharge point(s), and general contents.
  - (iv) Drainage patterns; and
  - (v) Evapotranspiration.
- (b) Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients, chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.
- (c) Description of sediment characteristics including:
  - (i) Deposition area;
  - (ii) Thickness profile; and
  - (iii) Physical and chemical parameters (e. g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.)

### 4. Air

The Permittee shall provide information characterizing the climate in the vicinity of the facility. Such information may include, but not be limited to:

- (a) A description of the following parameters:
  - (i) Annual and monthly rainfall averages;
  - (ii) Monthly temperature averages and extremes;



- (iii) Wind speed and direction;
- (iv) Relative humidity/dew point;
- (v) Atmospheric pressure;
- (vi) Evaporation data;
- (vii) Development of inversions; and
- (viii) Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence. (i.e. Hurricanes)
- (b) A description of topographic and man-made features which affect air flow and emission patterns, including:
  - (i) Ridges, hills or mountain areas;
  - (ii) Canyons or valleys;
  - (iii) Surface water bodies (e. g. rivers, lakes, bays, etc.); and
  - (iv) Buildings.

#### B. Source Characterization

For those sources from which releases of hazardous constituents have been detected, the Permittee shall collect analytical data to completely characterize the wastes and the areas where wastes have been placed, to the degree that is possible without undue safety risks, including: type, quantity; physical form; disposition (containment or nature of deposits); and facility characteristics affecting release (e. g., facility security, and engineering barriers). This shall include quantification of the following specific characteristics, at each source area:

##### 1. Unit/Disposal Area Characteristics:

- (a) Location of unit/disposal area;
- (b) Type of unit/disposal area;
- (c) Design features;
- (d) Operating practices (past and present)
- (e) Period of operation;
- (f) Age of unit/disposal area;
- (g) General physical conditions; and
- (h) Method used to close the unit/disposal area.

##### 2. Waste Characteristics:

- (a) Type of wastes placed in the unit;
  - (i) Hazardous classification (e. g., flammable, reactive, corrosive, oxidizing or reducing agent);
  - (ii) Quantity; and
  - (iii) Chemical composition.
- (b) Physical and chemical characteristics such as;
  - (i) Physical form (solid, liquid, gas);
  - (ii) Physical description (e. g., powder, oily sludge);
  - (iii) Temperature;
  - (iv) pH;
  - (v) General chemical class (e. g., acid, base, solvent);
  - (vi) Molecular weight;
  - (vii) Density;
  - (viii) Boiling point;
  - (ix) Viscosity;
  - (x) Solubility in water;
  - (xi) Cohesiveness of the waste; and
  - (xii) Vapor pressure.
- (c) Migration and dispersal characteristics of the waste such as:
  - (i) Sorption capability;
  - (ii) Biodegradability, bioconcentration, biotransformation;
  - (iii) Photodegradation rates;
  - (iv) Hydrolysis rates; and
  - (v) Chemical transformations.

The Permittee shall document the procedures used in making the above determinations.

#### C. Characterization of Releases of Hazardous Constituents

The Permittee shall collect analytical data on groundwater, soils, surface water, sediment, and subsurface gas contamination in the vicinity of the facility in accordance with the sampling and analysis plan as required

above. These data shall be sufficient to define the extent, origin, direction, and rate of movement of contamination. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. The Permittee shall address the following types of contamination at the facility:

### 1. Groundwater Contamination

The Permittee shall conduct a groundwater investigation to characterize any plumes of contamination detected at the facility. This investigation shall at a minimum provide the following information:

- (a) A description of the horizontal and vertical extent of any plume(s) of hazardous constituents originating from within the facility;
- (b) The horizontal and vertical direction of contamination movement;
- (c) The velocity of contaminant movement;
- (d) The horizontal and vertical concentration profiles of hazardous constituents in the plume(s);
- (e) An evaluation of factors influencing the plume movement; and
- (f) An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations (e. g., well design, well construction, geophysics, modeling, etc.).

### 2. Soil Contamination

The Permittee shall conduct an investigation to characterize the contamination of the soil and rock units above the saturated zone in the vicinity of any contaminant release. The investigation may include the following information:

- (a) A description of the vertical and horizontal extent of contamination;
- (b) A description of appropriate contaminant and soil chemical properties within the contaminant source area and plume. This may include contaminant solubility, speciation, absorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation;
- (c) Specific contaminant concentrations;
- (d) The velocity and direction of contaminant movement; and
- (e) An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations.

### 3. Surface Water and Sediment Contamination

The Permittee shall conduct a surface water investigation to characterize contamination in surface water bodies resulting from releases of hazardous constituents at the facility. The investigation may include, but not be limited to, the following information:

- (a) A description of the horizontal and vertical extent of any plume(s) originating from the facility,

- and the extent of contamination in underlying sediments;
- (b) The horizontal and vertical direction of contaminant movement;
- (c) The contaminant velocity;
- (d) An evaluation of the physical, biological and chemical factors influencing contaminant movement;
- (e) An extrapolation of future contaminant, movement; and
- (f) A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

#### 4. Air Contamination

The Permittee shall conduct an investigation to characterize gaseous releases of hazardous constituents into the atmosphere or any structures or buildings. This investigation may provide the following information:

- (a) A description of the horizontal and vertical direction and velocity of contaminant movement;
- (b) The rate and amount of the release; and
- (c) The chemical and physical composition of the contaminant(s) released, including horizontal and vertical concentration profiles.

The Permittee shall document the procedures used in making the above determinations.

#### D. Potential Receptors

The Permittee shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Chemical analysis of biological samples and/or data on observable effects in ecosystems may also be obtained as appropriate. The following characteristics shall be identified:

##### 1. Current local uses and planned future uses of groundwater:

- (a) Type of use (e. g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and
- (b) Location of ground water users, to include withdrawal and discharge wells, within one mile of the impacted area.

The above information should also indicate the aquifer or hydrogeologic unit used and/or impacted for each item.

##### 2. Current local uses and planned future uses of surface waters directly impacted by the facility:

- (a) Domestic and municipal (e. g., potable and lawn/gardening watering);
- (b) Recreational (e. g. swimming, fishing);
- (c) Agricultural;
- (d) Industrial; and

- (e) Environmental (e. g., fish and wildlife propagation).
- 3. Human use of or access to the facility and adjacent lands, including but not limited to:
  - (a) Recreation;
  - (b) Hunting;
  - (c) Residential;
  - (d) Commercial; and
  - (e) Relationship between population locations and prevailing wind direction.
- 4. A general description of the biota in surface water bodies on, adjacent to, or affected by the facility.
- 5. A general description of the ecology within the area adjacent to the facility.
- 6. A general demographic profile of the people who use have access to the facility and adjacent land, including, but not limited to: age; sex; and sensitive subgroups.
- 7. A description of any known or documented endangered or threatened species near the facility.

## APPENDIX C - CORRECTIVE MEASURE STUDY (CMS) OUTLINE

The purpose of the CMS portion of the RCRA corrective action process is to identify and evaluate potential remedial alternatives for the releases of hazardous constituents that have been identified at the facility through the RFI or other investigations to need further evaluation. The scope and requirements of the CMS are balanced with the expeditious initiation of remedies and rapid restoration of contaminated media. The scope and requirements of the CMS should be focused to fit the complexity of the site-specific situation. It is anticipated that Permittee's with sites with complex environmental problems may need to evaluate a number of technologies and corrective measure alternatives. For other facilities, however, the evaluation of a single corrective measure alternative may be adequate. Therefore, a streamlined or focused approach to the CMS may be initiated. Information gathered during any stabilization or interim measures will be used to augment the CMS and in cases where corrective action goals are met, may be a substitute for the final CMS.

Regardless of whether a streamlined/focused or a detailed CMS is required, a CMS Workplan and CMS Report are generally required elements. The requirements for a full, detailed CMS are listed below. The Department has the flexibility not to require sections of the plan and/or report, where site-specific situations indicate that all requirements are not necessary. Additionally, the Department may require additional studies besides these discussed in order to support the CMS.

### I. Corrective Measures Study (CMS) Workplan

#### A. Elements of the CMS Workplan

The Corrective Measures Study (CMS) Workplan shall include at a minimum the following elements:

1. A site-specific description of the overall purpose of the CMS;
2. A description of the corrective measure objectives, including proposed target media cleanup standards (e.g., promulgated federal and state standards), and preliminary points of compliance or a description of how a risk assessment will be performed (e.g. guidance documents);
3. A description of the specific corrective measure technologies and/or corrective measure alternatives which will be studied;
4. A description of the general approach to investigating and evaluating potential corrective measures;
5. A detailed description of any proposed pilot, laboratory and/or bench scale studies;
6. A proposed outline for the CMS Report including a description of how information will be presented;
7. A description of overall project management including overall approach, levels of authority (include organization chart), lines of communication, project schedules, budget and personnel. Include a description of qualifications for personnel directing or performing the work;
8. A project schedule that specifies all significant steps in the process and when key documents (e.g., CMS Progress Reports, draft CMS Report) are to be submitted to the Department;
9. A detailed Public Involvement Plan.

### II. Corrective Measures Study (CMS) Report

The detail of a CMS may vary based upon the complexity of the site, on-going Interim Measures, etc. However, the CMS Report may include the following elements:

A. Introduction/Purpose

The Permittee shall describe the purpose of the CMS Report and provide a summary description of the project.

B. Description of Current Situation

The Permittee shall submit a summary and an update to the information describing the current situation at the facility and the known nature and extent of the contamination as documented by the RCRA Facility Investigation (RFI) Report. This discussion should concentrate on those issues which could significantly affect the evaluation and selection of the corrective measures alternative(s). The Permittee shall provide an update to information presented in the RFI regarding previous response activities and interim measures that have or are being implemented at the facility. The Permittee shall also make a facility-specific statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

C. Establishment of Proposed Media Specific Cleanup Standards

The Permittee shall describe the proposed media cleanup standards and point of compliance. The standards must be background, promulgated federal and state standards or risk-derived standards. If media clean-up standards are not proposed, then the Department will unilaterally propose setting media clean-up standards to either background, promulgated federal and state standards or the most conservative risk-derived standards.

D. Identification, Screening and Development of Corrective Measure Technologies

1. Identification: List and briefly describe potentially applicable technologies for each affected media that may be used to achieve the corrective action objectives. Include a table that summarizes the available technologies.

The Permittee should consider innovative treatment technologies, especially in situations where there are a limited number of applicable corrective measure technologies.

2. Screening: The Permittee shall screen the corrective measure technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies that have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

Site, waste, and technology characteristics that are used to screen inapplicable technologies are described in more detail below:

- (a) Site Characteristics: Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration.
- (b) Waste Characteristics: Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration. Waste characteristics particularly affect the feasibility of in-situ methods, direct treatment methods,

and land disposal (on/off-site).

(c) Technology Limitations: During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

3. Corrective Measure Development: The Permittee shall assemble the technologies that pass the screening step into specific alternatives that have the potential to meet the corrective action objectives for each media. Options for addressing less complex sites could be relatively straightforward and may only require evaluation of a single or limited number of alternatives. Each alternative may consist of an individual technology or a combination used in sequence (i.e., treatment train). Different alternatives may be considered for separate areas of the facility, as appropriate. List and briefly describe each corrective measure alternative.

#### E. Evaluation of a Final Corrective Measure Alternative

For each remedy which warrants a more detailed evaluation (i.e., those that passed through the screening step), including those situations when only one remedy is being proposed, the Permittee shall provide detailed documentation of how the potential remedy will comply with each of the standards listed below. These standards reflect the major technical components of remedies including cleanup of releases, source control and management of wastes that are generated by remedial activities. The specific standards are as follows:

1. Protect human health and the environment.
2. Attain media cleanup standards set by the Department.
3. Control the source of releases to reduce or eliminate, to the extent practicable, further releases that may pose a threat to human health and the environment.
4. Comply with applicable standards for management of wastes.
5. Other factors.

In evaluating the selected alternative or alternatives, the Permittee shall prepare and submit information that documents that the specific remedy will meet the standards listed above. The following guidance should be used in completing this evaluation.

#### 6. Protect Human Health and the Environment

Corrective action remedies must be protective of human health and the environment. Remedies may include those measures that are needed to be protective, but are not directly related to media cleanup, source control or management of wastes. An example would be a requirement to provide alternative drinking water supplies in order to prevent exposures to releases from an aquifer used for drinking water purposes. Therefore, the Permittee shall provide a discussion of any short term remedies necessary to meet this standard, as well as discuss how the corrective measures alternative(s) meet this standard.

#### 7. Attain Media Cleanup Standards

Remedies will be required to attain media cleanup standards. As part of the necessary information for



satisfying this requirement, the Permittee shall address whether the potential remedy will achieve the remediation objectives. An estimate of the time frame necessary to achieve the goals shall be included. Contingent remedies may be proposed if there is doubt if the initial remedy will be successful (e.g., contingent remedies to innovative technologies).

#### 8. Control of Sources of Releases

The Permittee shall address the issue of whether source control measures are necessary, and if so, the type of actions that would be appropriate. Any source control measure proposed should include a discussion on how well the method is anticipated to work given the particular situation at the facility and the known track record of the specific technology.

#### 9. Comply With any Applicable Standards for Management of Wastes

The Permittee shall include a discussion of how the specific waste management activities will be conducted in compliance with all applicable state and federal regulations (e.g., closure requirements, LDRs)

#### 10. Other Factors

Five general factors will be considered as appropriate by the Department in selecting/approving a remedy that meets the four standards listed above. These five decision factors include:

- (a) Long-term reliability and effectiveness;
- (b) Reduction in the toxicity, mobility or volume of wastes;
- (c) Short-term effectiveness;
- (d) Implementability; and
- (e) Cost.

Examples of the type of information to include are provided below:

- (f) Long-term reliability and effectiveness: The Permittee may consider whether the technology, or combination of technologies, have been used effectively under analogous site conditions, whether failure of any one technology in the alternative would have any immediate impact on receptors, and whether the alternative would have the flexibility to deal with uncontrollable changes at the site. Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. In addition, each corrective measure alternative should be evaluated in terms of the projected useful life of the overall alternative and of its component technologies. Useful life is defined as the length of time the level of effectiveness can be maintained.
- (g) Reduction in the toxicity, mobility or volume of wastes: As a general goal, remedies will be preferred that employ techniques that are capable of eliminating or substantially reducing the potential for the wastes in SWMUs and/or contaminated media at the facility to cause future environmental releases. Estimates of how the corrective measure alternative will reduce toxicity, mobility and or volume of the waste is required and may be accomplished through a comparison of initial site conditions to expected post-corrective measures conditions.
- (h) Short-term effectiveness: The Permittee shall evaluate each corrective measure alternative for short-term effectiveness. Possible factors to consider are fire, explosion, exposure to

hazardous constituents and potential threats associated with the treatment, excavation, transportation and re-disposal or containment of the waste material.

- (i) Implementability: Information to consider when assessing implementability include:
- (i) The administrative activities needed to implement the corrective measure alternative [*e.g. permits, rights of way, etc.*] and the length of time these activities will take;
  - (ii) The constructability, time for implementation, and time for beneficial results;
  - (iii) The availability of adequate off-site treatment, storage capacity, disposal services, needed technical services and materials; and
  - (iv) The availability of prospective technologies for each corrective measure alternative.
- (v) Cost: The Permittee shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs. The capital costs shall include, but are not limited to, costs for: engineering, site preparation, construction, materials, labor, sampling/analysis, waste management/disposal, permitting, health and safety measures, etc. The operation and maintenance costs shall include labor, training, sampling and analysis, maintenance materials, utilities, waste disposal and/or treatment, etc. Costs shall be calculated as the net present value of the capital and operation and maintenance costs.

#### F. Justification and Recommendation of the Corrective Measure or Measures

The Permittee shall justify and recommend in the CMS Report a corrective measure alternative for consideration by the Department. Such a recommendation should include a description and supporting rationale for the preferred alternative that is consistent with the corrective action standards and remedy selection decision factors discussed above. In addition, this recommendation shall include summary tables that allow the alternative or alternatives to be understood easily. Trade-offs among health risks, environmental effects, and other pertinent factors shall be highlighted. The Department will select the corrective measure alternative or alternatives to be implemented based on the results presented in the CMS Report.

## APPENDIX D – ADDITIONAL COMPLIANCE DATES

Permit Condition	Event	Due Date
I.E.14	Imminent Hazard Report.	Oral notification within 24 hours. Written notification within fifteen (15) days.
VI.A	Waste Minimization Certification.	If applicable, annually from the effective date of the Permit.
The submittals above must be signed and certified in accordance with R.61-79.270.11.		